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*The*

# CHEMIST AND DRUGGIST

Established 1859

28 Essex Street, Strand, London, W.C.2.

Registered as a Newspaper

No. 2741  
VOL. CXVII.

AUGUST 20, 1932

Annual Subscription (with  
Diary) 20/-, Single Copies 9d.

*One of the many British Products which have made the name of Meggeson famous:—*



# Vistic

Regd.

A little sprinkled on the Denture gives immediate adhesion and comfort

Every chemist should stock it

Retails at 1/9 and 1/- P.A.T.A.  
13/- and 7/- per doz.

**MEGGESON & CO LTD**  
Established over 130 years  
**BERMONDSEY, LONDON**

*The* **PERFECT  
PACKAGE**

**BAKELITE  
&  
OPAL**

PRICES  
ON  
APPLICATION

STOCKS KEPT  
OF IMPORTANT  
SIZES

*Supplied only in wholesale quantities by*  
**THE INTERNATIONAL BOTTLE C° LTD**

PHONE:  
MET. 6161  
4 LINES

48 FORE STREET, LONDON, E.C.2.

GRAMS:  
AUTREFOIS  
LONDON

SMALL QUANTITIES OBTAINABLE THROUGH PRINCIPAL DRUGGIST HOUSES



# A few lines of real interest to pharmacists who wish to cultivate a flourishing business in toilet requisites

## Lanoline Cream



One of our most successful introductions has been this liquid cream containing Adeps lanæ in perfect suspension.

An ideal skinfood, it has a large variety of uses, superseding the old-fashioned Toilet Lanoline.

2 oz. 6/- dozen.      Retail 10½d.  
4 oz. 10/-        "        "        1/6

## Spirit Brilliantine



A brilliantine which really keeps the hair in position satisfactorily, while at the same time its use is most beneficial, owing to the castor oil and spirit content.

Also very refreshing on application.  
2 oz. 10/- dozen.      Retail 1/6.

## Daily Mouth Wash



A pleasant and efficacious preparation for daily use to keep the mouth sweet and clean.

6½ dozen.      Retail 1/-.

## Cream of Honey and Almonds



2 oz. 3/9 dozen

Panel bottles  
Retail 6d.

Compares most favourably with many well-known creams, both in price and in quality.

## Le Jeune Hair Tint



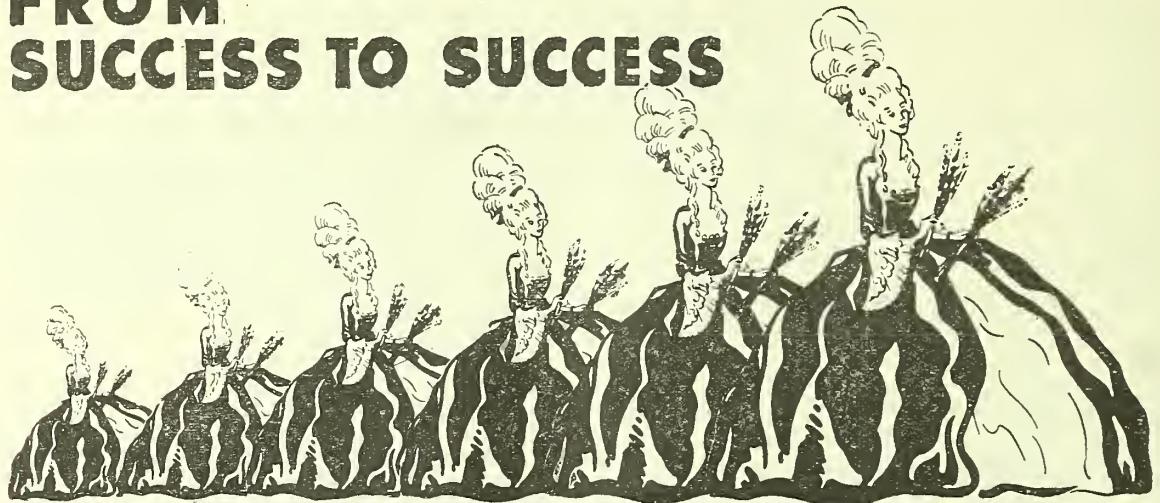
Small	10/6	Retail 1/6
Medium	18/-	,, 2/6
Large	30/-	,, 4/-

A very worth while side of the chemist's business often overlooked.

Every effort spent in making a sale is returned tenfold, because the user is compelled to return for further supplies.

**ARTHUR H COX & CO LTD**  
**Manufacturing Chemists**  
**BRIGHTON ENGLAND**

# FROM SUCCESS TO SUCCESS



*Announcing the Queen Anne Lavender Water*  
**WINDOW DISPLAY CONTEST**

• AUGUST 22 TO SEPTEMBER 30 •

WITH PRIZES OF  
 20 GNS. 15 GNS. 10 GNS.  
 ALSO TEN CONSOLATION  
 PRIZES of 2 GNS. each,

and NEW  
**NATIONAL  
 ADVERTISING**  
 and Special  
**CONCENTRATION**  
 ON SEASIDE  
 TOWN & COUNTRY

This is to herald the immediate commencement of the new Queen Anne Sales Campaign, which includes

1. A National Window Display Contest.
2. New concentrated National Press Advertising.
3. New Display Material and Sales Aids.

Now is the time to sell Queen Anne *through your window*. Link up with Queen Anne advertising and take your fullest share of the big *maintained-price* profits of this first-class seller, whose success grows bigger every day—despite the fiercest competition. Keep Queen Anne in the window. Full delightful display material on request.

• ENTER AND ORDER NOW •

If you have not already  
 received full details —  
 write us to-day.

# Queen Anne

L A V E N D E R      W A T E R

MARLBOROUGH & CO., LTD., 491 LIVERPOOL ROAD, LONDON, N.7

Sells

*Do you know that*

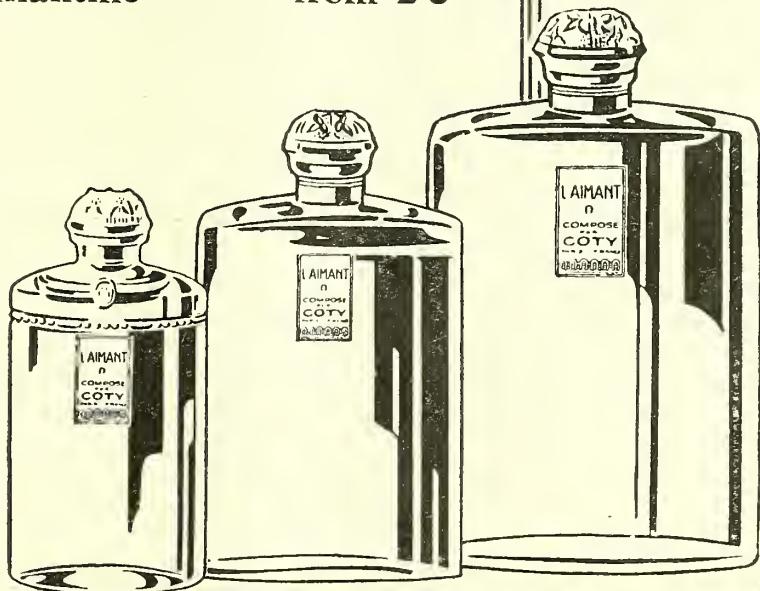
# COTY

*make all these toilet  
essentials in the popular*

## L'AIMANT PERFUME

L'Aimant Face Powder	- - 1/- & 1'9
L'Aimant Perfume	- - - - from 3'9
L'Aimant Foundation Cream	9d, 1'3, 2'6
L'Aimant Soap	- - (box of 3 tablets) 3'9
L'Aimant Bath Salts	- - - - 6/-
L'Aimant Bath Powder	- - from 3'9
L'Aimant Brilliantine	- - from 2'6

?



**NO INCREASE  
IN PRICE**

COTY (England) LTD., COTY HOUSE,  
3, Stratford Place, LONDON, W.1  
Telephone: Mayfair 7244.  
Telegrams: "Paricoty, Phone, London."

# A BIG selling push

*to introduce . . .*



**SUCCESS PROVED ALREADY OVERSEAS**



★ **NOW, Intensive Advertising Campaign in London papers**

OPTREX Eye Lotion is a new profitable branded product selling through Chemists with a wide appeal to all classes. It definitely creates a new market. For with the increasing strain of modern working conditions and recreations—the microbe-laden dust and smoke in towns, the crowded atmosphere of cinemas and theatres, car-driving, sun-bathing, long hours of sport—it fills a need that has been growing rapidly during recent years. Its use will become a habit as popular and permanent as that of the daily tooth brushing. Its success, overseas, is already widespread and firmly established.

THE Advertising Campaign *costing thousands of pounds* is just about to open in the important London newspapers. Big 16" triple-column advertisements will appear almost daily during the next few months.

These advertisements are so strikingly dramatic and convincing that they cannot fail to produce an *immediate* demand for OPTREX on an enormous scale.

Send to-day for full details and free display matter. The price of OPTREX is maintained at 2/- and 3/9 a bottle and allows a generous margin of profits to stockists.

*Obtainable from all wholesalers or direct from*

WILCOX JOZEAU & Co. (FOREIGN CHEMISTS), LTD., distributors for Great Britain and the Irish Free State 15, Great St. Andrew Street, London, W.C.2. 'Phone: Temple Bar 7111. 'Grams: Physic, Westcent, London.

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Perfumery boxes

Robinsons of CHESTERFIELD.

WHEAT BRIDGE MILLS, CHESTERFIELD &amp; 168, OLD STREET, LONDON, E.C.1.

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*Make a mental note* —

**JOHN THOMPSON (WHOLESALE DRUGGISTS) LTD**

**SUPPLY**

*Everything  
in  
Photographics*

27-35 DUKE STREET LIVERPOOL

WE ARE THE  
ONLY HOUSE IN  
LIVERPOOL  
CARRYING A  
COMPLETE STOCK  
OF ALL  
PHOTOGRAPHIC  
MATERIALS —  
INCLUDING  
“SELO,”  
“ENSIGN”  
FILMS, etc.

PHOTOGRAPHIC  
GOODS SUPPLIED  
TO APPROVED  
PHOTOGRAPHIC  
DEALERS ONLY

# "BUSH"

## HIGH-CLASS PERFUMERY COMPOUNDS

### Eau de Cologne.

- 597 Continental type possessing a warm aromatic note.
- 860 Very soluble—specially suitable for use in weak alcohol.
- 991 A fresh English type—suitable for high-grade toilet waters and general cosmetic work.
- 1012 A fresh Continental type for high-grade toilet waters and general cosmetic work.
- 927 Specially suitable for Bath Salts and Soap.

### Lavender.

- 560 Specially prepared for Bath Salts.
- 842 Specially prepared for use in high-class toilet soaps.
- 921 Excellent for shaving soap, cream and general cosmetic work.
- 1016 For high-class toilet waters—a typical Mitcham type—very conservatively priced.

SAMPLES AND PRICES WITH PLEASURE

**W. J. BUSH & CO. LTD.**  
**Ash Grove, Hackney, London, E.8**

Tel. Add.:  
"Tangerine, London"

Factories and branches at Mitcham, Widnes, Grasse, Messina,  
New York, Montreal, Brisbane, Melbourne, Sydney, Johannesburg

Tel. No.:  
Clissold 0461 (5 lines)

*A List of*

Adeps Benzoatus  
 Adrenalin  
 Amylopsin  
 Beef Juice\*  
 Carmine  
 Catgut\*  
 Cerebrin  
 Corpus Luteum\*  
 Diastase (Animal)  
 Digestive Ferments  
 Duodenin  
 Enzymes\*  
 Galactis  
 Hæmoglobin  
 Insulase\*  
 Lactated Pepsin  
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 Liver\*  
 Lymphatic  
 Mammary  
 Mam-Ovarian  
 Mam-Placenta  
 Meduphites  
 Multigland\*  
 Myelin  
 Orchitic  
 Ovarian\*  
 Ovarian Residue\*  
 Ovo-Testis\*  
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 Ox Gall  
 Pancreas  
 Pancreatin  
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 " Compound\*  
 " Cortex  
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 " Compound  
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 Thyroid\*  
 Thyo-Manganese\*  
 Trypsin

\*LITERATURE  
AVAILABLE  
ON REQUEST

# FERROGLANOID

## REINFORCED LIVER EXTRACT

Combining Glanoid Concentrated Fluid Extract  
of Liver with Iron.

12 Grains of *Ferri et Ammon. Cit.* to each drachm.

### CHIEF INDICATIONS

Anaemia of Malnutrition.

Anaemia following Uterine Haemorrhage.

Anaemia of the New-born and of Children.

*In bottles at—*

**5/9      10/6      20/6**

*Literature on "Ferroglandoid" will be sent on receipt of professional card.*

LABORATORY DEPARTMENT  
**ARMOUR AND COMPANY**  
 LIMITED  
 ARMOUR HOUSE, St. MARTIN'S-LE-GRAND,  
 LONDON, E.C.1.

TELEGRAMS: "ARMOSETA-CENT," LONDON.  
 TELEPHONE: NATIONAL 2424.

Making a  
most popular  
appeal to the  
woman of to-day . . .

Parfumerie de Fleury  
is now enjoying an  
appreciative sales  
response and an enviable  
record of acceptance  
throughout the country



*A presentation case of the  
popular "Lady Gay" perfume*

# DE FLEURY

PERFUMES & TOILET DELIGHTS

A display of *Parfumerie de Fleury* in your window will very soon prove to you the money-making possibilities of this new series

PARFUMERIE DE FLEURY RAWDON LEEDS

# women are beginning to talk...



**They are saying the "IVA" Fur Puff is what they've been waiting years for, and where can they get one ?**

*"IVA"—the perfect powder puff for true facial hygiene has met with instant success.*

"IVA" is the easy-to-remember name for the only fadeless, washable, real fur powder puff. It is guaranteed 100% hygienic, made in the newest pastel and fashionable shades—and it is British.

"IVA" Fur Puffs are retailed at popular prices ranging from 6d. to 3/11, showing the full trade profit on all lines, with the usual discount terms. For example, the 6d. puff costs you 4/3 per dozen, the 9d. puff 5/9 per dozen, the 1/- puff 7/9 per dozen, and so on. A wide range of Sports and Handkerchief puffs are also available.

Many leading London and Provincial Stores already report big sales. The wholesale houses have comprehensive stocks ready for your demands.

## WHOLESALE STOCKISTS OF "IVA" FUR PUFFS

from whom you can obtain full details and stocks of all styles

R. HOVENDON & SONS LTD.,  
89-95, City Road, E.C.1  
R. HOVENDON & SONS LTD.,  
29, Berners Street, W.1  
BUTLER & CRISPE LTD.,  
80/84, Clerkenwell Road, E.C.1  
BARCLAY & SONS LTD.,  
95, Farringdon Street, E.C.4  
SANGERS LTD.,  
42a, Hampstead Road, N.W.1  
HEWLETT & SONS LTD.,  
35, Charlotte Street, E.C.2  
WILLIAM TOOGOOD LTD.,  
77, Southwark Street, S.E.1  
WATTS BROS. LTD.,  
72, Cannon Street, Manchester  
SINGLE DALBY & CO.,  
42, Oldham Road, Manchester  
T. & H. SMITH LTD.,  
32/4, Virginia Street, Glasgow  
LORIMER & MOYES LTD.,  
7, Montrose Street, Glasgow  
11, Waterloo Place, Edinburgh.  
HEATH BROS.,  
101/3, Chapel Street, Salford  
JOHN J. DENTON LTD.,  
7, Williamson Square, Liverpool

## TO HELP YOUR SALES

**1** Extensive advertising in National Papers at the beginning of September means millions of women will be asking for "IVA" Puffs.

**2** Simple but colourful Showcards tell the "IVA" story.



**3** This attractive packing makes an ideal counter or window display.



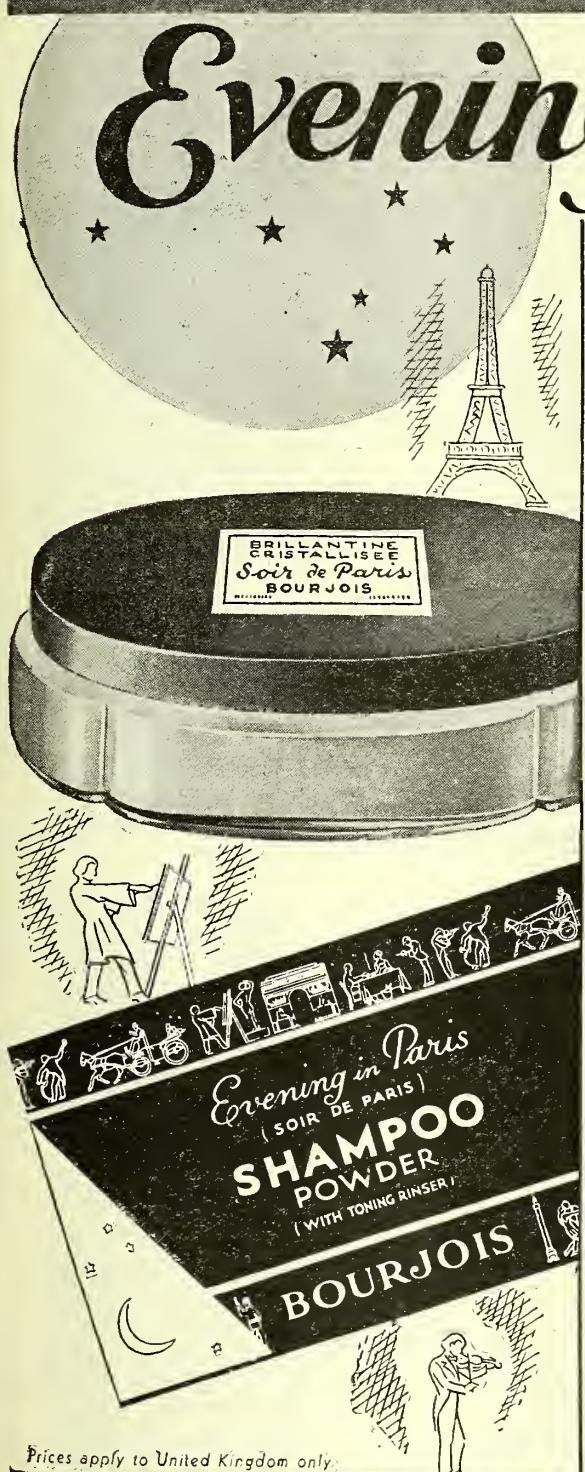
THE "IVA" MANUFACTURING COMPANY,  
25-29 BANNER STREET • LONDON • E.C.1



# IMPORTANT NEW LINES

# Evening in Paris

SOIR de PARIS



Prices apply to United Kingdom only.

## EVENING IN PARIS

### SOLID BRILLIANTINE

A first-quality Brilliantine of agreeable consistency and just the right delicate touch of refreshing perfume.

RETAIL

**1<sup>1</sup>/6**

## EVENING IN PARIS

### SHAMPOO POWDER

Strengthens and beautifies the hair—exquisitely perfumed. Separate toning rinsing powder with each shampoo.

RETAIL

**6<sup>d</sup>**

Cat. No. 6106.  
4/- per dozen.

(Packed two dozen  
in Display Outer.)



**B O U R J O I S**

A. BOURJOIS et CIE, LTD., 4, Water Lane, LONDON, E.C.4.  
Laboratories and Works: 71-73, Carter Lane, London, E.C.4, and River Plate Wharf, Upper Ground Street, London, S.E.1

*Everywhere  
there is a growing demand  
among men for a really good  
Hair Cream - that is why*

# 'JULYSIA' SALES GO UP

JULYSIA arouses the enthusiasm of client and chemist alike. Men like it because it gives them all they wish for in a hair cream at a very moderate price. Chemists like it because it assures them a steadily-moving line allied with substantial profit. Read these details of our bonus scheme :—

"JULYSIA" CREAM IS PACKED  
IN TWO SIZES  
1/- size at 8/- doz. 1/6 size at 12/- doz.

BONUS TERMS—13 bots. to the doz.  
SPECIAL CARRIAGE PAID  
PARCELS On Bonus Terms :—

No. 1 PARCEL

4 dozen 1/- size  
With FREE BONUS of 4 × 1/- Bottles  
and 4 × 1 pints for Saloon use

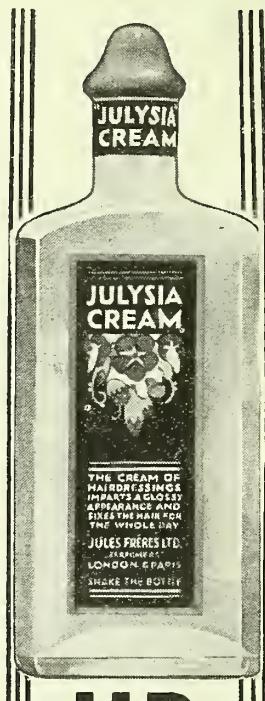
No. 2 PARCEL

3 dozen 1/- size. 1 dozen 1/6 size  
With FREE BONUS of 3 × 1/- & 1 × 1/6  
Bottles and 4 × 1 pints for Saloon use

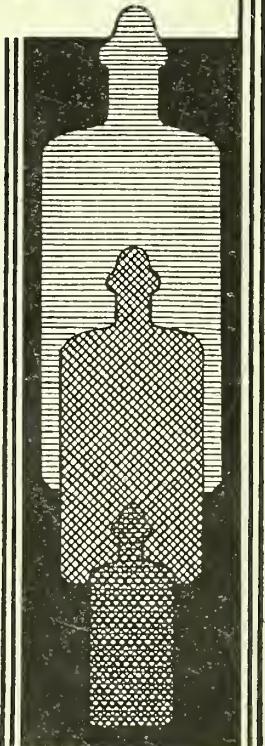
"JULYSIA" is also supplied in Bulk for Saloon use :—  
7/6 gallon, 4/- half gallon, 1/6 pint

A PRODUCT OF  
**JULES FRÈRES** LTD.

Perfumers, 154-164 WALWORTH ROAD, LONDON, S.E.



UP  
UP  
UP



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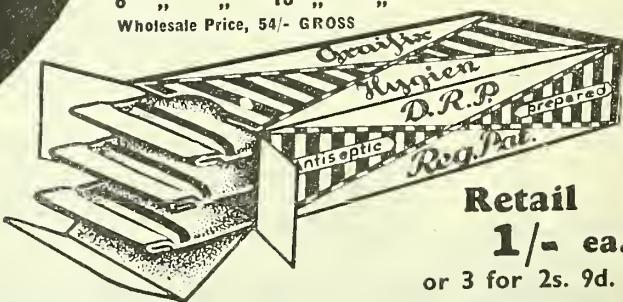
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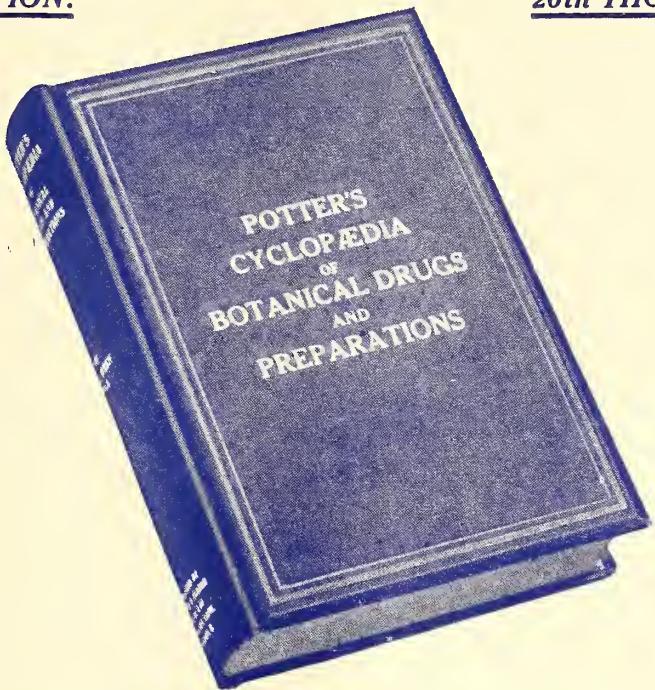
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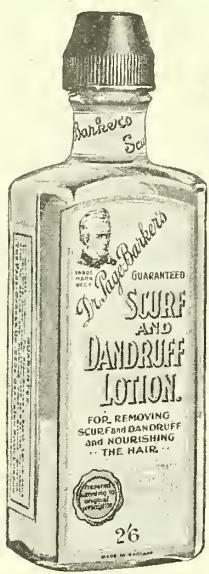
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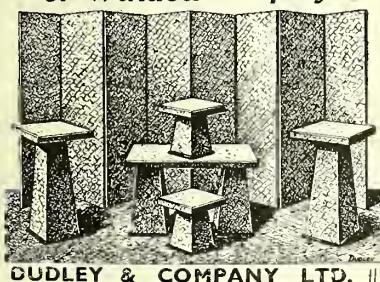
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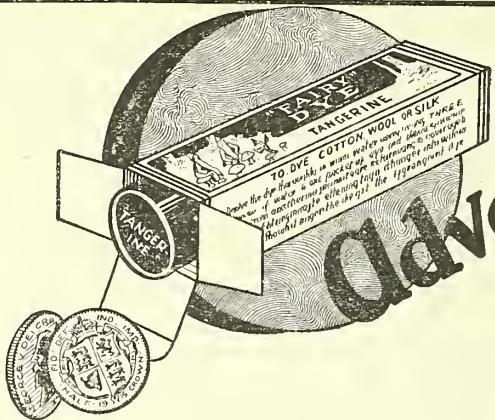


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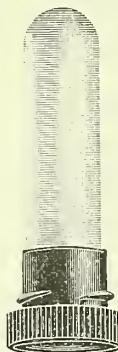
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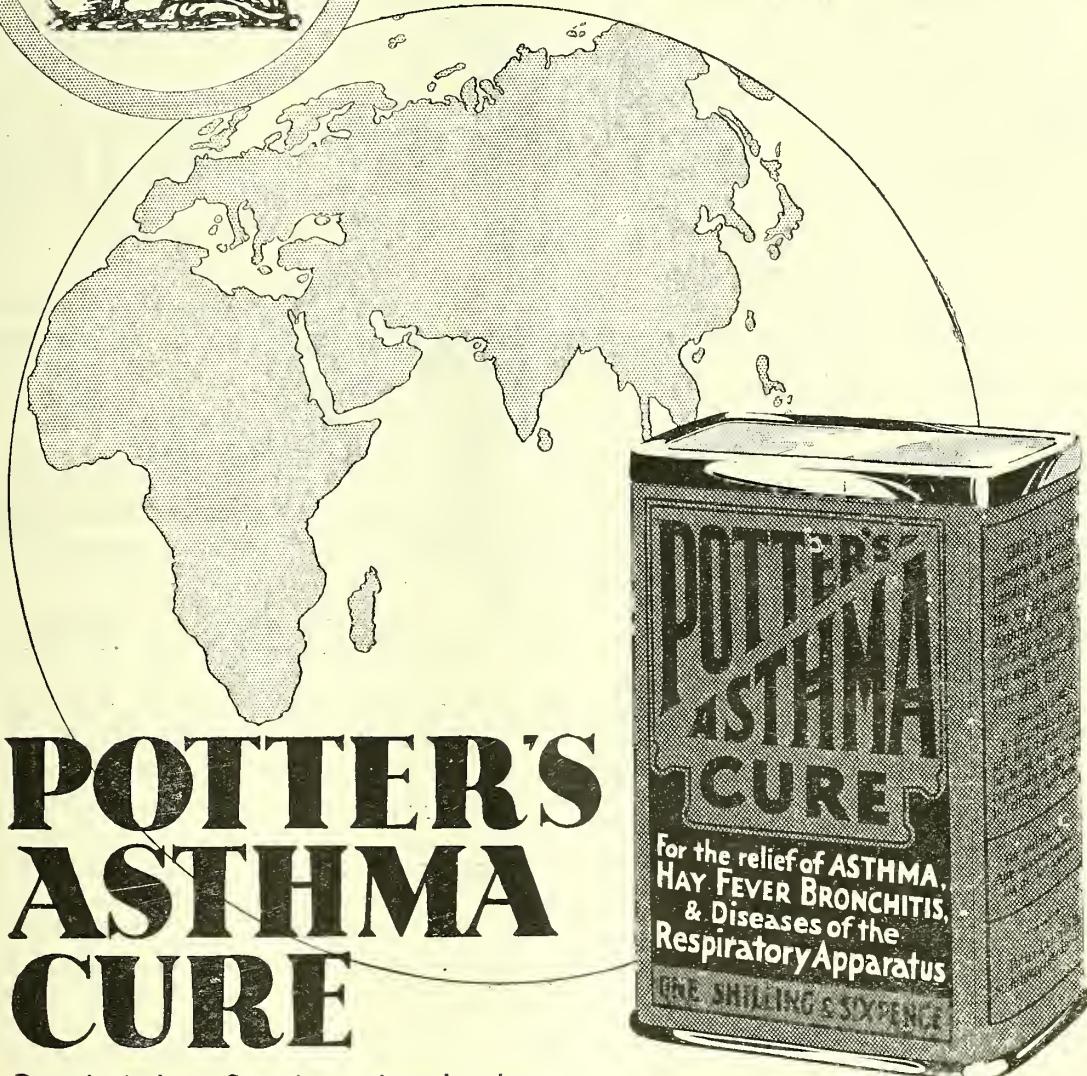
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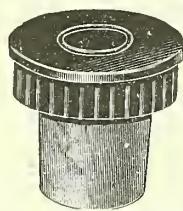
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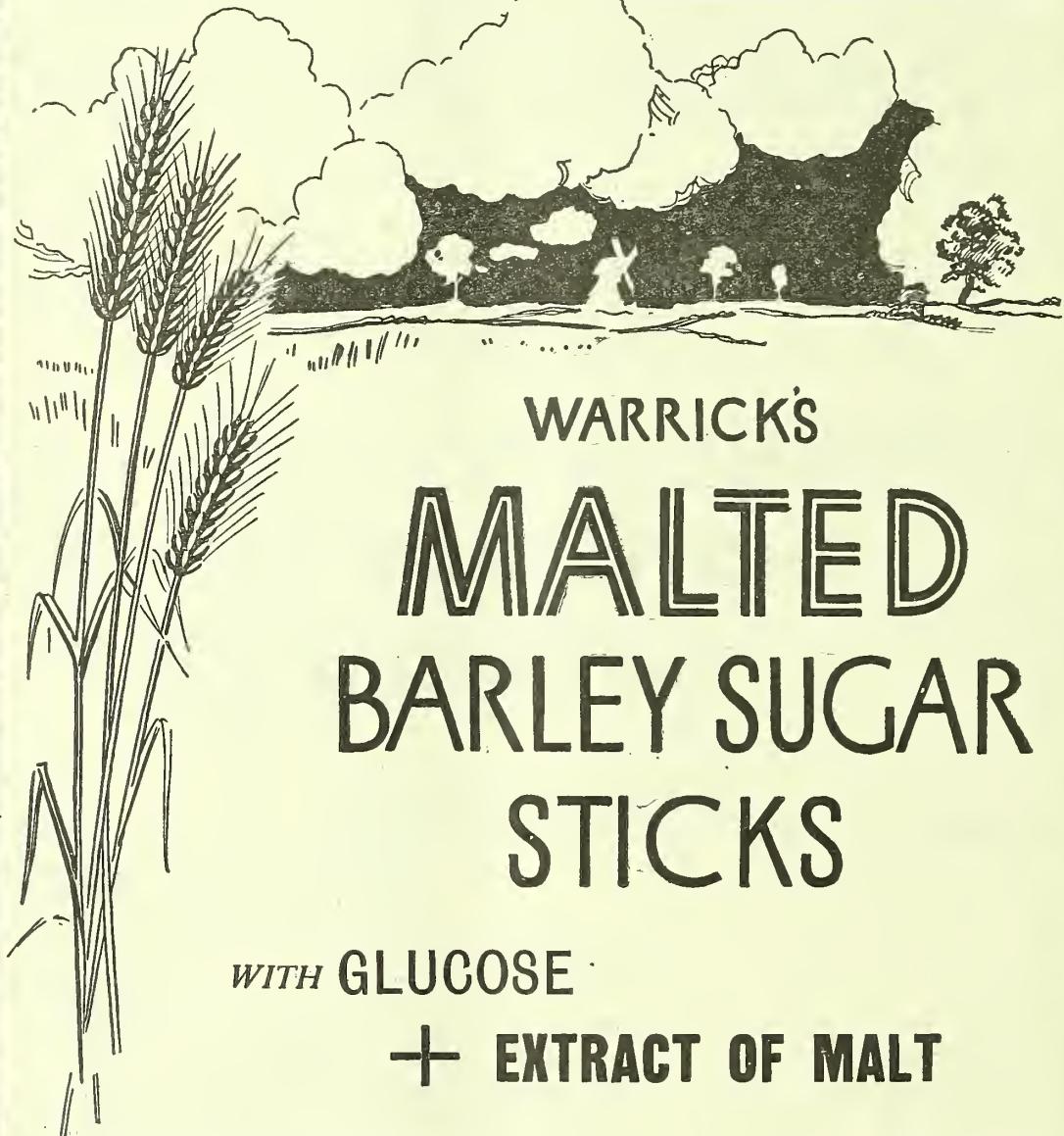
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A Weekly Journal of Pharmacy, the Drug, Chemical and Allied Trades

The official organ of The Pharmaceutical Society of Ireland,  
The Chemists' and Druggists' Society of Ireland, and of  
other Chemists' Societies in Overseas Dominions

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## News of the Week

### Exportation on Drawback by Parcel Post

A warrant has been issued (S. R. & O., 1932, No. 611: Stationery Office, 1d.) making regulations for delivery from the premises of exporters for exportation on drawback by parcel post. The warrant came into operation on July 16.

### British Association

The annual meeting of the British Association for the Advancement of Science will be held in York on August 31-September 7 inclusive. The president (Sir Alfred Ewing, K.C.B., F.R.S.) has selected as the title of his address "An Engineer's Outlook." Among the sectional presidents are Dr. W. H. Mills, F.R.S. (chemistry), Professor A. O. Rankine (mathematical and physical sciences), and Professor J. H. Priestley (botany). Dr. Mills will deliver a presidential address on "Some Aspects of Stereochemistry"; Professor Rankine will speak on "Some Aspects of Applied Geophysics"; and Professor Priestley will discuss "The Growing Tree." The chemical subjects arranged for include "The Nature and Size of the Colloid Particles of Cellulose and Related Substances" and "Compound Formation in Liquid Mixtures." Among the botanical subjects are "Bacteria in Relation to the Decay of Stone" and "Tracheidal Variations in Ferns." The programme includes the customary outings and other social events.

### Inquests

A verdict of "Death from misadventure" was recorded, at a recent inquest at Stoke-on-Trent, on the body of Elsie M. Davall, aged seven, who died as the result of drinking a solution of carbolic acid. It

appeared from the evidence that the carbolic acid was in a ginger-beer bottle.

An inquest was held at Newcastle-on-Tyne, on August 11, on the body of Miss Julia Ann Murray, who, it was stated, had been in the employ of Mr. J. T. Robinson, Ph.C., Ealing, London, W., and was found dead in a sleeping car at Heston, Newcastle. Evidence of a nervous breakdown was given, and a verdict that death was due to taking salt of lemon in a depressed state of mind was recorded.

### Miscellaneous

POISON-LICENCE APPLICATIONS.—Application for a licence under Section 2 of the Poisons and Pharmacy Act, 1908, has been made to the respective local authority by the following:—Mr. T. H. Relf, Sandinstead, Surrey; G. Twyman & Sons, Ltd., Canterbury and Lamberhurst, Kent.

WEST HAM CHEMISTS' OUTING.—The members of the West Ham Association of Pharmacists spent an interesting afternoon, on August 11, in visiting the Inns of Court. At Lincoln's Inn the party was taken over the great Hall and Chapel. From there the members proceeded to the Middle Temple and the Inner Temple, where again the chief points of interest were described. The visit concluded with a visit to Temple Church. Mr. A. Mortimer, vice-president of the Association, who made the arrangements, entertained the company to tea. Mr. W. Main, president of the Association, tendered to Mr. Mortimer the appreciation of the members. This was seconded by Mr. J. Thomson.

IN THE COURTS.—At Ellesmere Port Sessions, on August 10, Alfred H. Brown, Blackpool, was fined 20s.

on each of two summonses, for selling dutiable medicines without a licence and unstamped.—At Darlington Police Court, recently, Mr. J. E. Hodgson, Ph.C., High Row, was summoned for causing an obstruction to the footpath. Mr. D. Clark, for the Corporation, stated that following a survey the town clerk wrote to Mr. Hodgson. Mr. Hodgson stated that after the receipt of the letter he instructed his assistants not to place such things on the pavement, but it was possible that the instruction had not been properly carried out. He raised the point, however, that his shop was legally in the Market Place, and that he was entitled to use part of the pavement. Alternatively he contended that the practice was sanctioned by long custom. The summons was dismissed on payment of costs.—At Leicester, recently, Harry Dunbar, described as a medical herbalist, was fined £10 for prescribing treatment for a disease for reward.—At Leicester, on August 17, Thomas Inskip, shopkeeper, was fined 10s. for having sold a corn paint unstamped; it was stated that the retail price of the paint was 2d.

## Irish Notes

### Brevities

There was a slight outbreak of fire at the premises of Mr. A. J. McHenry, Ph.C., Conway Square, Newtownards, recently. The local fire brigade extinguished the flames before much damage was done.

At a recent meeting of the Dublin Board of Assistance a councillor raised the question of the appointment of compounders when the Board's permanent compounders went on leave. In some instances, he said, deputies either employed in chemists' shops or in part-time employment with chemists got these locum appointments; he thought these appointments should be given to unemployed chemists or compounders, of whom there were plenty in Dublin. The chairman said there was no means of ascertaining the position of the substitutes recommended.



MEMBERS OF THE ULSTER RETAIL DRUG TRADE ASSOCIATION AT DERBY  
Left to right: Messrs. W. J. Hardy, J. Glendinning, J. Maxwell, J. Dundee, W. Blair, J. Adams

## Scottish Notes

### Scotlands Medical History

We are indebted to an Aberdeen correspondent, writing apropos of the Conference meeting to be held next month, for the following paragraph:

The "medicine men" of early Scotland were the Druids. The combination of priest and doctor was very common among uncivilised races. The Culdee missionaries and the Romans (south of the wall of Antonius) added to the science. Later, small hospitals existed in connection with abbeys and priories and on desolate roads. The earliest noteworthy hospitals in Aberdeenshire were situated at Newburgh and Turriff. Aberdeen had three hospitals. One was the Bead-house, which stood near the church of St. Nicholas and was founded in 1459. Another was in Old Aberdeen, founded by Bishop Dunbar in 1532. A third was built on the road

between Old and New Aberdeen, in the district now known as the Spital—hence the name. The medical school in Aberdeen (as explained in the *C. & D.* Special Issue of June 25) dates from the foundation of the University in 1494. When the Infirmary was founded in 1740, Dr. Gordon, Professor of Medicine at Marischal College, was elected physician and surgeon at a salary of £10 10s. per annum, he agreeing to supply all the drugs!

### Brevities

August promises to eclipse July in the amount of photographic business transacted, but the sale of cameras this year seems likely to turn out a fiasco.

Reduced overhead charges are regarded in many quarters as one of the essential steps to betterment in business. There is a growing demand for reduced rentals for business premises and telephones.

## Sporting Events

CARDIFF and District pharmacists played for the Newbery cup over the Radyr golf course, recently. The winner was Mr. T. Fowler (Cadoxton) with a score of 89-19=70, and the runner up was Mr. H. Husbands (Cardiff) with a round of 90-18=72. Mr. Loyley (the local director of Francis Newbery & Sons, Ltd.) entertained the competitors and visitors to tea in the club house, and Mrs. Loyley presented the cup.

THE Glasgow Pharmacy Golf Club and the Glasgow Grocers' Golf Club held their annual match at Bonnyton Course on August 9. The following players represented the chemists:—Messrs. E. Blyth (captain), E. Allison, A. Aitken, J. Cruickshanks, D. Duncan, J. Erusmuson, J. Hart, J. Jeffreys, John Low, James Low, T. MacLean, K. MacKenzie, J. McEwan, R. Pollock, A. Scott, W. Seivewright, J. Tulloch, A. Taylor, D. Wood Wilson. The grocers won by 11 games to 9. After the match Captain Blyth congratulated the winners.

## French News

From the "C. & D." Paris Correspondent.

LA SOCIÉTÉ D'HISTOIRE DE LA PHARMACIE held its chief meeting of the year, recently, at the Faculté de Pharmacie de Paris, under the presidency of M. le Doyen honoraire Radais. The general meeting decided, after discussion, to keep the subscription at 15 fr. for France and 30 fr. for foreign countries. Subscriptions are received at the Faculté de Pharmacie, 4 avenue de l'Observatoire, Paris 6e.

**SIMPLES OR MEDICAMENTS?**—French herbalists have the legal right to sell fresh or dried "simples," and the question whether a mixture of several of these "simples" constitutes a medicament has frequently been disputed. It seems to have been generally accepted by the courts that such a mixture constitutes a medicament, and cannot, therefore, be legally sold by herbalists. But the prosecution of individual herbalists and obtaining proof of sale is difficult, and the General Association of French Pharmacists, finding that such mixtures are often prepared wholesale by non-pharmacists, brought a successful action against one of these wholesalers, a firm of "droguistes." The Association also drew the attention of M. Radais, Dean of the Paris Faculty of Pharmacy, to the practice, and he addressed a letter to the Wholesale Druggists' Association, pointing out its illegality, and suggesting the herbalists should not be granted these supplies. The General Association hopes that this official letter will suffice, for the Wholesale Druggists' Association has advised its members to "abstain from any commercial transaction susceptible of being considered as an invasion of the legitimate domain of the pharmaceutical profession."

# Opium Research in India

**A**CCORDING to the report for the past year of the Opium Agent at Ghazipur to the Central Board of Revenue, the research work being carried out in the Punjab University chemical laboratory, under the supervision of Dr. H. B. Dunncliff (special chemical adviser to the Board of Revenue), relates to the following subjects:—(1) Conversion of narcotine into a febrifuge, (2) oxidisability of morphine in storage, and (3) estimation of pseudo-morphine in morphine. The work on (2) and (3) is being carried out in connection with the known loss of morphine in opium during storage. The ultimate aim is to find a means of preventing loss, but this is still a far-distant prospect, for as yet there has been no close approach to the solution of the preliminary problem, the discovery of what happens to the morphine which disappears and of the causes which result in its disappearance.

Tests of morphine obtained from single plants grown on experimental plots near the factory, with a view to selective breeding, were undertaken by the opium chemist, who proved that, by a method devised by him, the morphine strength of a single plant can be readily determined. This method may become of great value financially for it should enable a botanist to do what it has never yet been possible to do, namely, to evolve a pure strain of poppy for the factors producing high morphine content. The production of such a strain

might enable Indian opium to compete in the European and American markets against Turkish and Salonika opium, but until means can be found to arrest the loss of morphine, it seems of no avail to attempt to produce such a strain, since the present experience is that the higher the initial morphine content, the quicker is the loss of morphine; so that after a short period of storage the advantage of high initial content is lost.

During the year an experiment was begun of making biscuits out of Malwa opium. The Government of India have further decided that the opium factory at Ghazipur should undertake the purification of adulterated contraband cocaine seized by the customs authorities.

The scheme for the manufacture of excise opium in tablet form by machinery has, under the orders of the Government of India, been postponed on financial grounds. The factory laboratory, however, is carrying on investigations on the stability of tablets when stored in hermetically-sealed tins. The Government have also decided to purchase during the period of the next ten years all the existing stocks of hard opium in Mewar, computed to be 8,000 chests; this opium will be warehoused at Indore. The total net profit during the past year was Rs. 114 lakhs, a decline of Rs. 23 lakhs compared with the previous year. This is stated to be due to smaller sales of provision opium in accordance with the policy of Government for the cessation of this trade at the end of 1935.

## Topical Reflections

By Xrayser

### Pharmacy Students

who are looking forward to presenting themselves for their qualification test at an early date will have noted with interest that a knowledge of the British Pharmacopœia, 1932, will not be expected of candidates for examinations of the Pharmaceutical Society to be held before July 1933 (*C. & D.*, August 6, p. 139). In effect this means that candidates beginning their systematic course of instruction in October of this year will need to begin the study of the new Pharmacopœia straightway, immediately it comes into force and copies of it become available for individual use. At first sight this appears to be fair and reasonable, but I can see difficulty arising owing to the fact that pharmacy teachers will have to begin their study of the book at the same time as those whom they need to instruct. This must necessarily involve some delay in imparting instruction based on critical study, and it may be that conscientious teachers will find themselves unable to show their pupils how the numerous problems of the Pharmacopœia ought to be attacked until the new session is well advanced. Taking all the circumstances into consideration, I would suggest that not until the new Pharmacopœia has been in force for at least twelve months should the Pharmaceutical Society's examiners expect candidates for the qualifying examinations to possess such knowledge of the contents of the book, so far at least as it differs materially from the 1914 Pharmacopœia, as might reasonably be expected of them if they had been able to make themselves acquainted with the new standards during their period of shop training.

### The British Pharmacopœia,

to a much greater extent than is appreciated generally, permeates the pharmaceutical curriculum in such a way as to render it one of the fundamentals upon which the knowledge expected of

candidates for qualification as pharmacists is based. It sets the limits of what candidates should know in chemistry, physics and botany, with their applications in *materia medica* and pharmaceutics, and those limits are wide indeed. In addition, we are given to understand that the new Pharmacopœia will require for its full comprehension a competent knowledge of biology and physiology. Quite obviously skilled interpretation of the new standard medicine book will be called for, and pharmacy lecturers will need to put in a period of intensive study before they can set themselves the task of explaining the why and wherefore of what the British Pharmacopœia, 1932, contains that is new or different from the contents of its predecessor. That task will be no less arduous because of the absence for some time to come of such useful commentaries as we have all come to rely upon. I gather that the stringent conditions which are being imposed by the General Medical Council upon those accustomed to produce works explaining or commenting upon the contents of the British Pharmacopœia will have the effect of preventing publication of new editions of those works until some considerable time after the new Pharmacopœia comes into force.

### Essential Oils,

which receive official recognition, leave the pharmaceutical retailer so much at the mercy of those who supply him that it has always seemed to me the B.P. standards for such oils should not be so restrictive as some experts—usually analysts—would like them to be. Prominent among those who preach sweet reasonableness in the matter of fixing standards is Mr. E. J. Parry, who wrote on the subject of official essential oils last week (p. 154). It seems to me a great pity that omission to consult a recognised authority should result in the appearance of a book of standards marked by deficiencies which could so easily have been avoided.

## Legal Reports

**Chemist's Unsuccessful Action.**—In Aylesbury County Court, recently, Mr. Claud P. E. Fuller, chemist and druggist, Wendover, sued Dr. Horace Rose, Wendover, a member of the Buckinghamshire Insurance Committee, in respect of the sum of £20 19s. 4d., being the amount of the costs of a Ministry of Health inquiry. The plaintiff conducted his own case, and Mr. R. D. Sale appeared for the defendant. In the course of his argument, the plaintiff described Dr. Rose as an "intermediary telephonist" in relation to correspondence which had passed between him (the plaintiff) and the Insurance Committee. His Honour: You are wanting me to give you £20 19s. 4d. for the costs of an inquiry, the costs of which you were ordered to pay, and which inquiry went against you. That seems to be absolutely farcical. After further argument, judgment was given for the defendant, with costs.

**Dangerous Drugs Acts.**—At Southampton Police Court, on August 11, Dr. John Joseph Coghlan, Station Road, New Barnet, appeared in answer to summonses for being in unlawful possession of twenty 4-gr. tablets of morphine sulphate with atropine sulphate without being authorised; procuring from Dr. O'Connell, Oxford Street, Southampton, the tablets; and giving prescriptions for diamorphine linctus which were not signed by the person giving them. Mr. G. J. Baugh, barrister, who prosecuted for the Director of Public Prosecutions, said that the cases turned on the fact that the defendant had already been convicted for an offence under the Dangerous Drugs Act. Dr. O'Connell, believing that Dr. Coghlan was authorised in these matters, handed to him a tube of morphine tablets to be used in his practice. Dr. Patrick O'Connell gave corroborative evidence. Answering Mr. Hiscock, who appeared for the defence, witness said that he had sometimes asked the defendant to use his (witness's) name. The prescriptions referred to were for witness's patients, and they might have been written at his dictation. As to the morphine tablets, he might have put them in the desk where they were found. Evidence was given by Mr. W. M. Cox, Ph.C. (Randall & Wilson, Ltd.), Mr. G. P. A. Hunt, Ph.C., and Mr. A. Charlton, chemist and druggist. The defendant gave evidence on his own behalf. The Bench intimated that they had decided to convict on the summons for being in possession, but to dismiss the other summonses. A fine of £5, with costs, was imposed.

**Perpetual Injunction.**—In the Vacation Court, London, on August 17, Mr. Justice Goddard had before him the motion Beechams Pills, Ltd., v. Horsenilli (otherwise Horsenail), in which the plaintiffs asked for an injunction to restrain the defendant from infringing their trade mark. The allegation was that the defendant sold stomach pills in containers bearing the words "in competition with Beechams," the first three words being in type much smaller than the word "Beechams." His lordship asked why it had been necessary to bring the motion in the High Courts and thus add to the expense the defendant must have to incur in costs. Mr. Kenneth Swan, who appeared for the plaintiffs, replied that action for infringement did not lie in the county court. His Lordship: This is only a small man. Mr. Swan: But small men sometimes do an extremely big trade in these cheap remedies, and it is the duty of manufacturers to protect their own trade marks and protect the public from spurious articles. His Lordship (to the defendant): People come in and ask you for Beecham's pills and you hand them these things. They have not all got their spectacles on when they look at the label. The defendant: They are stomach pills sold in competition with Beecham's. I say they are as good. His Lordship: If you do that any more you may get into serious trouble. It seems like dishonest trading as you are going on. The defendant said he would agree to the perpetual injunction asked for. His lordship made the perpetual injunction, the plaintiffs agreeing to waive the claim for damages; he gave the plaintiffs £3 3s. costs.

## New Companies and Company News

P.C. means Private Company and R.O. Registered Office.

**MEDICINAL REMEDIES, LTD.**—(P.C.)—Capital £500. Objects: To carry on the business of chemists, druggists, drysalters, oil and colour men, etc. Solicitor: Wm. Wright, 200 Wolverhampton Street, Dudley.

**WYEVAL, LTD.** (P.C.)—Capital £1,000. Objects: To carry on the business of wholesale and retail manufacturing chemists, druggists, drysalters, oil and colour men, etc. Solicitors: Lambe, Carles & Capel, 36 Bridge Street, Hereford.

**PAB, LTD.** (P.C.)—Capital £1,000. Objects: To carry on the business of manufacturing, refining, preparing and dealing in all kinds of oils, emulsions, ointments, drugs, chemicals, perfumes, cosmetics, etc. Solicitors: Cardew, Smith & Ross, 27 Ely Place, London, E.C.1.

**DIMOL (VETERINARY), LTD.** (P.C.)—Capital £5,000. Objects: To carry on the business of manufacturers of and dealers in all kinds of veterinary preparations, animal foods, etc., and to adopt an agreement with Dimol Laboratories, Ltd. R.O.: 40 Ludgate Hill, London, E.C.4.

## Liquidations

**Drake's Pharmacies, Ltd.**—The statutory first meeting of the creditors and shareholders of this company (in liquidation) was held on August 15 at the Board of Trade Offices, Carey Street, London, W.C.2, before Mr. G. Digby Pepys. The company was formed as a private company on March 21, 1931, with a capital of £400, to acquire and carry on the business of a chemist conducted by Francis Augustine Drake at 51 St. Peter's Street, N.1, under the style of St. Peter's Pharmacy. The tenancy of the premises had been acquired by Mr. Drake in the previous February, and he fitted them up at a cost of £200. St. Peters (Brauns) Pharmacies, Ltd., has subsequently carried on the business. A statement of affairs was submitted, showing liabilities £265, against assets £39, and a deficiency of £625 with regard to contributors. The meeting was adjourned with a view to the appointment of a liquidator.

**Roberts, Cole & Co., Ltd.**, 37-38 Margaret Street, London, W.1. In this compulsory liquidation, Mr. E. T. A. Phillips, Official Receiver, has now issued to the creditors and to the shareholders a summary of the company's statement of affairs, which discloses unsecured liabilities £13,501, preferential creditors £189 (to rank for £74), and estimated assets £4,163, leaving with regard to the creditors a deficiency of £9,257. A total deficiency of £29,527 is shown in regard to the shareholders. In his observations the Official Receiver reports that the company was registered as a private company on April 9, 1931, and was promoted by Francis Edward Roberts and Thomas Watkins Cole. The company commenced a publicity campaign, and appears to have had some difficulty in obtaining supplies quickly enough to meet the demand. By September creditors were beginning to press for the payment of their accounts, and it became evident that fresh capital would have to be introduced. Negotiations were accordingly opened with a Mr. Phillips, who lent £5,500 to the company to enable it to pay its more pressing creditors. Subsequently, however, the negotiations between the directors and Phillips broke down. In the opinion of the Official Receiver the failure of the company is due to ill-considered expenditure in view of the lack of working capital and mismanagement by the directors of the negotiations for the introduction of fresh capital. As a result of the statutory meetings of creditors and contributors, the Official Receiver remains the liquidator of the company.

# Pharmaceutical Society of Great Britain

## Edinburgh Examination Results

THE following are the results of the examinations held in Edinburgh during July:—

### PHARMACEUTICAL CHEMIST QUALIFYING EXAMINATION

The following seven candidates passed out of nineteen examined:—Cattanach, A. B. L., Aberdeen; Haslam, E., Oldham; Heading, W. R., Glasgow; McAdam, G. C. H., Glasgow; McKim, T., Paisley; Macmorran, G. H., Glasgow; Smith, Helen L., Glasgow.

### CHEMIST AND DRUGGIST QUALIFYING EXAMINATION

	No.	PRELIMINARY SCIENTIFIC				CHEMIST AND DRUGGIST QUALIFYING			
		Absent	Failed	Referred	Passed	Absent	Failed	Referred	Passed
Entered for Prelim. Sc. exam.	351	4	148	64	135	—	—	—	—
Referred subject in Prelim. Sc. exam.	41	—	—	11	30	—	—	—	—
Entered for C. and D. exam.	265	—	—	—	—	7	46	68	144
Referred subject in C. and D. exam.	11	—	—	—	—	—	—	2	9
	668	4	148	75	165	7	46	70	153

Candidates have been referred as follows:—Botany, 26; chemistry, 31; physics, 18; pharmacognosy, 6; pharmacy, 33; pharmaceutical chemistry, 24; forensic pharmacy, 7; total, 145.

Candidates have failed as follows:—Botany, 137; chemistry, 139; physics, 124; pharmacognosy, 30; pharmacy, 40; pharmaceutical chemistry, 38; forensic pharmacy, 25.

### CHEMIST AND DRUGGIST QUALIFYING EXAMINATION

The following candidates, having satisfied the examiners, have been registered as chemists and druggists:—

Ackers, Stanley, Liverpool	Davies, Kathleen W., Edinburgh
Acraman, I. N., Manchester	Dixon, E. P., Newcastle-on-Tyne
Adamson, F., Milnathort	Dove, H. W., Scarborough
Addis, A., Middlesbrough	Duncan, I., North Shields
Aitken, J. G., Aberdeen	Dutton, E. H., Crewe
Anderson, J., Edinburgh	Edwards, R. J., Bala
Archibald, J. S., Cross-gates	Elmer, J. H., Barnoldswick
Armstrong, T. L., Maryport	Erskine, William, Aberdeen
Bibby, Sam, Burnley	Evans, I., Llwyngwrl
Brabender, J. C., Glasgow	Farmer, Nellie E., Gatehouse of Fleet
Brooks, Frank, Morecambe	Faulkner, Donald, Hull
Brown, J. H., Glasgow	Ford, R. S., Dundee
Bryant, N. C., Sunderland	Foster, Thomas, Keighley
Burns, J. D., Bradford	Fowler, W. C., Leeds
Cains, William, Wallasey	Foy, E. E., Liverpool
Campbell, H. S., Aberdeen	Fraser, G. E., Dundee
Catley, E. C., Northwich	Frater, J. H., Galashiels
Charlton, J. H., Darlington	Gardner, J. K., Ulverston
Clark, James, Selkirk	Gibbesson, J. L., Shildon
Cowey, Fred., Sunderland	Gibson, H. W., Llandudno
Craven, R., Knaresborough	Gillespie, P., Aberdeen

Goodchild, J. W., N. Berwick	Gourlay, Ronald, Alloa
	Grant, A. J., Elgin
	Grant, A. R., Arbroath
	Grant, J. N., Falkirk
	Gray, W. D., Kinghorn
	Green, K. L., Crewe
	Greener, T. R., Whitley Bay
	Harland, May I., Edinburgh
	Harrison, Jack, Leeds
	Harryman, T. J., Keswick
	Henderson, A., Edinburgh
	Henderson, J. S., Aberdeen
	Herbert, N. V., York
	Hetherington, C. W., Tynemouth
	Hilton, John, Stretford
	Hodgson, W. S., Bradford
	Hyman, Maurice, Leeds
	Innes, J. M., Aberdeen
	Isherwood, S., Bolton
	Ives, B. C., Egglestone
	Jobling, Charlotte J., Morpeth
	Johnson, D. J., Blackpool
	Johnson, Wilfred, Leeds
	Johnstone, G., Thornhill
	Kellet, Joseph, Leeds
	Kemp, J. W., Leeds
	Kinnaird, G. A., Aberdeen
	Lane, L. H., Barnoldswick
	Latimer, W., Edinburgh
	Laverick, P., Bishop Auckland
	Laws, J., Newcastle-on-Tyne
	Lawson, Gavin, Newmilns
	Laycock, Jonas, Keighley
	Leiper, G. M., Aberdeen
	Lewis, G. W., Caernarvon
	Liddell, J. S., Gourock
	Lockett, Frank, Southport
	Louis, J. P., Sedbergh
	McCaig, J. B., Troon
	McCall, Robert, Lanark
	McGuckin, A., Gateshead-on-Tyne
	McGuire, Mary A., Edinburgh
	McHowat, T. D., Glasgow
	Mack, A., Glasgow
	Macpherson, J., Nairn
	Macpherson, P. K., Kilwinning
	McWilliam, A., Glasgow
	Maddison, Freda, Pelton
	Manners, Sydney, Coundon
	Martin, Norman, Leeds
	Massam, G. H., Liverpool
	Mason, Fred, Nelson
	Maxwell, E. C. M., Edinburgh
	May, F. W. H., Crewe
	Michaelson, J. E., Edinburgh
	Moodie, J. F., Galashiels
	Moon, Dorothy W., Liverpool
	Nichols, J. A., Blackhill
	Nicholson, D. F., Leith

Noble, Naizby, Gateshead
Padgett, Walter, Leeds
Paterson, R. D., Edinburgh
Pearson, J. D., Edinburgh
Pearson, J. D., Selby
Phillip, Anne M. G., Dundee
Philpott, C. E., Whitley Bay
Pickering, H., Llangefni
Reid, J. G., Aberdeen
Rhodes, Wilfred, Leeds
Richardson, R. G., Paisley
Ritchie, D., Edinburgh
Ritchie, Mary, Edinburgh
Ritchie, Williamina, Arbroath
Roberts, R. B., Liverpool
Robertson, R. A., Coatbridge
Robertson, R. W., Warrington
Robinson, C. H., Fleetwood
Roddan, Elizabeth W. E., Dunscore
Roebuck, B. S., Huddersfield
Rothney, E. W., Aberdeen
Scott, J. M., Glasgow
Seymour, H. C., Cupar-Fife
Shaw, John, Dundee
Sidebottom, V. R., Morecambe
Smeddles, A. W., Barrow
Smith, Catherine M., Glasgow
Smith, D. E. R., Dundee
Smith, H., Dunfermline
Smith, J. W., Oldham
Stangroom, R. W., West Hartlepool
Stephen, L. P., Turriff
Street, L. W. C., Liverpool
Sutherland, Marjorie, Whitley Bay
Sykes, J. H., Halifax
Tait, J. W., Aberdeen
Taylor, Albert, Southport
Thomson, Phyllis E., Dundee
Thomson, Robert, Denny
Troup, W. D., Aberdeen
Walker, Irene E., Middlesbrough
Ward, W., West Hartlepool
Watkins, R. S., Whitley Bay
Watson, Sarah, Bedlington
Webb, Ralph, Dundee
White, J. A., Shipley
Wilkinson, T., York
Wilson, R. H., Blackburn
Wilson, Thomas, St. Abbs
Woodhouse, J. E., Morecambe
Young, J. F., South Shields

# The Paradox of General Pharmacy

By John Humphrey, Ph.C., Chairman of the British Pharmaceutical Conference 1929-30

**W**HEN a registered chemist practises pharmacy in an open shop, his position so far as regards his professional occupation corresponds to that of the general medical practitioner, as distinguished from that of the specialist, because he pursues his calling on general rather than special lines. He may not inappropriately, therefore, be described as a general pharmaceutical practitioner or general pharmacist, practising general pharmacy as distinct from the specialised practice in hospital dispensaries and elsewhere. The paradox of general pharmacy is that the British public needs the professional services of many more than are actually engaged in general pharmaceutical practice, whilst many of those who are fully qualified to provide efficient pharmaceutical service find it difficult to secure adequate remuneration for their professional services, and a not inconsiderable number experience difficulty in even finding suitable occupation.

It has long been thought that there are more chemists' shops in this country than are justified by existing circumstances, and we are often told that pharmacy is over-crowded because so many duly qualified chemists and druggists are out of work. Yet there have always been places where the lack of a chemist's shop was keenly felt, and it seems improbable that any considerable proportion of the legitimate pharmacies now extant could be closed without the local population experiencing a sense of loss. Overcrowding of chemists' shops is, of course, evident in some urban districts, and some reduction in their numbers might possibly be effected without serious inconvenience to the public. But there is a real scarcity of chemists' shops in many other places, mainly, if not entirely, because doubt attaches to the possibility of success attending the efforts of chemists and druggists to make a living in those particular places.

### Insufficient Pharmaceutical Practice

This seemingly paradoxical situation is due to the fact that, though there is undoubtedly need of readily obtainable pharmaceutical service in every residential area, there has not so far been sufficient pharmaceutical practice to maintain adequately the number of chemists and druggists actually in business, let alone to maintain others in places not at present served by legitimate pharmacies. Moreover, it seems improbable that the practice of pharmacy, properly so-called, ever will provide sufficient occupation and adequate means of livelihood for as many chemists and druggists as the needs of the population of this country call for, unless and until there is a decided change in the public estimation of the value of pharmaceutical service and a greater disposition to resort only to legitimate pharmacies for medical and surgical requisites. In fact, to put the matter quite bluntly, the British public needs the services of more pharmacists than it can afford, or is prepared to pay for; and it is therefore a problem how to bring efficient pharmaceutical service within the easy reach of everyone who needs it.

Chemists and druggists have endeavoured to solve this problem by eking out their returns from the sale of medicaments and the dispensing of medicines in other ways, involving the transaction of business of a more general character. Perhaps it would be stating the case more correctly to say that chemists and druggists have done what they could to meet the obvious public want, by adding to their original business as retailers of chemicals and drugs the dispensing of medicines, and fitting themselves by training and examination to undertake such other professional work as they may be called upon to do. This evolution of the general practitioner in pharmacy from the chemist and druggist has been effected to the undoubted advantage of the British

public, and further development of the practice of pharmacy as a professional occupation will unquestionably be still more in the public interest. But the point remains that it is most unlikely there will ever be sufficient purely pharmaceutical work to occupy the entire attention of the large number of practising pharmacists required to cover the whole country efficiently. It ought to be possible to have the services of a pharmacist available wherever there is a medical man practising or, maybe, wherever there is a post office. But in no case can the practice of pharmacy be expected to provide more than part of the business of a chemist and druggist; and the problem to be solved, in the public interest, is how to provide more extended pharmaceutical service on terms that will satisfy those providing the service. Meanwhile it is necessary to direct attention to the fact that it is just as important for the general pharmacist to be fully trained and equipped for the public service as it is for the general medical practitioner.

### No Lower Grade Needed

No encouragement should be given to talk about recognising a lower grade of qualification in pharmacy, since the public need requires that every pharmacist should be a master of his art and capable of co-operating with medical practitioners in the public service to a much greater extent than has yet been general. Even if temporarily restricted by circumstances to the compounding and dispensing of medicines ordered in medical prescriptions, and to the supply of packed and branded medicaments, he should yet be capable of attaining to a wider sphere of usefulness in the public service whenever the opportunity of doing so may present itself. There is urgent and pressing need for what Mr. Herbert Skinner has so aptly described as the consolidation of pharmacy into an organised profession capable of advancing to a position of usefulness in the continuous war on disease and unfitness. He has also pointed out that by bridging the gap between dispensing a bottle of medicine and the application of pharmacology, biological analysis and similar ancillary needs, in the rational treatment of disease, the base of the pharmaceutical calling will be broadened and its economic use extended. But it does not follow that every pharmacist must be trained to the extent here visualised, which, after all, indicates what will be required in the case of specialists rather than general practitioners. There should, however, be no two opinions about the training and equipment of the general pharmacist being such as will enable him to specialise in any direction that the public service may require, when called upon to do so.

The point remains that, whilst the public needs require that the professional services of a fully trained pharmacist should be readily available in every part of the country, provision for remunerating such services is markedly lacking at the present time. To a considerable extent the problem thus presenting itself has been solved by the general pharmacist embarking upon other activities to supplement the revenue from his professional occupation. But the British public must be educated up to the point of recognising that it needs services for which it has never yet provided adequate remuneration, and that, at the very least, it should resort to the chemist's shop for everything it requires in connection with the prevention and cure of disease. Practical recognition by the public of the pharmacist, as the only person fully competent to supply its medical and surgical needs in the shape of goods to be purchased, would go far towards solving the problem how to provide adequate pharmaceutical service wherever it is needed, and the paradox of general pharmacy would then cease to exist.

## Births

Notices for insertion in this column must be properly authenticated.

**RHEINBACH.**—At Adelaide Nursing Home, Dundee, on August 5, Mary (*née* Watson), the wife of F. C. Rheinbach, chemist and druggist, of a daughter (Phyllis Mary).

**YARDLEY.**—At "Kildonan," Main Road, Gidea Park, Essex, on August 16, Madge, wife of John J. Yardley, Ph.C., M.P.S., of a daughter.

## Marriages

**BUNNIP-JOHNSTONE.**—At the Greenbank P.M. Church, Darlington, recently, William Bunnip to Lena, younger daughter of Mr. John Johnstone, chemist and druggist.

**HOUGHTON-KNOTT.**—At St. Matthew's Church, Bolton, on August 11, George Sidney Houghton to Janet Knott, younger daughter of Alderman Percy Knott, J.P., chemist and druggist, and of Mrs. Knott, J.P.

**SIMPSON-KENNEDY.**—At Chalmers Church, Girvan, recently, William C. Simpson, chemist and druggist, to S. Kennedy.

**WATERSON-MACKENZIE.**—At the Crown Church, Inverness, on August 12, by the Rev. Stewart Mechie, M.A., assisted by the Rev. R. F. Whiteley, B.D., Thornliebank, Francis, eldest son of Mr. J. Waterson, Thornliebank, to Ada, second daughter of Mr. Thomas Mackenzie, Ph.C., F.C.S., Inverness.

## Deaths

**BILLINGTON.**—Recently, the wife of Mr. S. P. Billington, chemist and druggist, 79 Midland Road, Macclesfield, Rotherham.

**JENKINS.**—On August 3, Mr. Lewis Edwards Jenkins, chemist and druggist, 142 High Street, Portmadoc, aged fifty-one.

**RIDYARD.**—At Derby, on August 12, suddenly, Mr. Clement William Ridyard, chemist and druggist, High Street, Codnor, aged fifty-seven. Mr. Ridyard, who had been under medical care, died in the act of stepping from his motor-car. He was born in Lincoln, and was educated at Boston Grammar School. After serving his apprenticeship to Grimble & Kent, Boston (with whom he remained for a time as assistant), and qualifying, he had a varied experience before commencing business at Codnor in 1904. Mr. Ridyard held office at various times as secretary of the Derbyshire Pharmaceutical Association, secretary of the Derbyshire and Ilkeston Pharmaceutical Committees, and member of the Executive of the Midland Federation of Pharmaceutical Associations. He also served on the old local Associations Executive, and on two occasions was a candidate for election to the Council of the Pharmaceutical Society. At the funeral at Codnor, on August 16, the Derby Pharmaceutical Committee was represented by Mr. H. G. Toy and the Derbyshire Insurance Committee by Alderman A. J. Cash.

**SUFFERN.**—At his residence, Ballygomartin Road, Belfast, on August 15, Mr. Samuel Suffern, R.D., formerly senior director of Suffern & Co., Ltd., chemists, 302 and 304 Shankhill Road. Mr. Suffern served his apprenticeship with Morrow, Robinson & Co., and was afterwards with J. & J. Haslett, Ltd., North Street. He established himself in business in 1893. Mr. Suffern was president of the Chemists' and Druggists' Society of Ireland in 1913 and in 1919.

**WYNNE-WILLIAMS.**—At the Pharmacy, Dolgellau, on August 10, Mr. Richard Wynne-Williams, J.P., chemist and druggist, aged ninety. Mr. Wynne-Williams was a well-known figure in North Wales, and had taken a very active part in public life. He had been a member of the Dolgellau Urban Council and the Merioneth County Council. He was also one of the most prominent laymen of the Baptist Union of Wales, a governor of the Dr. Williams Dolgellau School and chairman of the Dolgellau Bench. The funeral took place on August 15, when the following officiated: Rev. H. R. Williams Corris, Rev. H. Ellis, Carnarvon, Rev. E. Williams (president of the Baptist Union of Wales), Cernyn Williams (ex-president, Baptist Union), Rev. H. Rees, Pwllheli, Rev. D. Williams, Corwen, and Rev. Conway Davis, Dolgellau.

## Personalities

**ALDERMAN PERCY KNOTT, J.P.**, chemist and druggist, Bolton, has been appointed a patron and trustee of the parish church of St. Matthew.

**MR. T. W. EATON**, chemist and druggist, who recently retired from the Prison Service (*C. & D.*, June 18, p. 673), has been presented by the staff of Parkhurst with a canteen of cutlery.

**MR. G. H. YOUNG**, managing director of McClure, Young & Co., Ltd., manufacturing chemists, Barnes, London, S.W.13, is leaving for a business tour in Canada and the United States on August 19.

**MR. L. MORETON PARRY**, Princes Road, Liverpool, a past-president of the Pharmaceutical Society, who has been seriously ill for some months, is gradually recovering, and hopes shortly to complete his convalescence at Rhyl.

## Wills

**MR. FREDERIC JOHN GIBSON, J.P.**, chemist and druggist, Wolverhampton, died on April 12, leaving £7,995, with net personality £1,044.

**MR. WILLIAM BRUCE WRIGHT**, 44 Margaret Street, Greenock, chemist and druggist, who died on February 13 last, left personal estate valued at £2,931.

**MR. WILLIAM HENRY BUTLER, J.P.**, The Priory, Westbury, Gloucester, late head of William Butler & Co., chemical manufacturers, Bristol, left estate of the value of £132,718 19s.

**MR. JAMES DOUGLAS PETRIE**, "The Braes," Kirk Wynd, Blairgowrie, chemist and druggist, who died on February 22 last, left personal estate in Great Britain valued at £2,037.

**MR. JOHN WILD**, 13 Park Range, Victoria Park, Manchester, chemist and druggist, who died on February 28 last, aged seventy-seven, left estate gross value £1,026, with net personality £985.

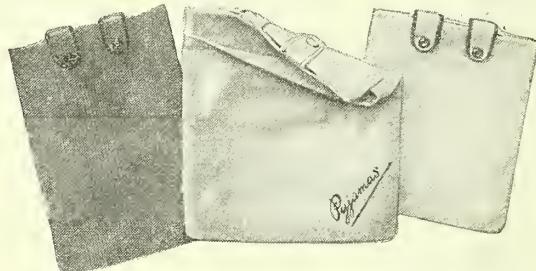
**MR. HUBERT HUXLEY MASON**, Green Court Gardens, Addiscombe, chairman of the Anglo-American Pharmaceutical Co., Ltd., Dingwall Road, East Croydon, who died on June 25, left estate of the gross value of £7,595 9s., with net personality £6,474.

**MR. FREDERIC LENNARD**, of Colwood Court, Warmington, Sussex, and of 25 Brunswick Square, Hove, head of Messrs. Forbes, Abbot & Lennard, Ltd., chemical manufacturers, 52 Grosvenor Gardens, London, S.W.1, died on February 5 last, aged seventy-five, leaving £163,871, with net personality £126,461.

**MR. PERCY THOMAS**, Drury House, 81 Greenside Road, Croydon, Surrey, chemist and druggist, who was last seen alive on May 2, 1930, and was found dead on May 6, 1930, aged seventy-two, left property of the gross value of £19,061, with net personality £12,935.

## Trade Notes

HOT WATER BOTTLE COVERS.—Solport Brothers, Ltd., 184 Goswell Road, London, E.C.1, have sent us samples of three of their new lines in hot-water bottle covers for the coming season. One of these, H.14A, is already well known from the point of view of quality, but this year these covers are printed with such words as "Good-



night," "Happy dreams," and similar wording, free of charge. H.14K is a new corduroy material at a moderate price available in a good range of colours. H.150 is a cover with a pyjama pocket, the latter being printed with the word "Pyjamas" to indicate the use for which it is intended.

BONUS OFFER.—Arridge Langmead & Co., Ltd., Alco Works, Rookery Way, The Hyde, Hendon, London, N.W., are making a bonus offer in regard to Alco shampoo powders. Full particulars will be found on another page of this issue.

EMPIRE TRADE DEVELOPMENT.—For the first time in the history of the Commonwealth of Australia the official lists of telegraphic addresses are to be published, and the contract to publish them throughout the world has been secured by Business Dictionaries, Ltd., 8 and 9 Johnson's Court, London, E.C.4, who, as is well known, are also the publishers of Sell's Directory of Registered Telegraphic Addresses, which contains the official lists of code addresses for this country. It is anticipated that this new publication will be available at the end of this year.

OPTREX EYE LOTION.—Wilcox, Jozeau & Co. (Foreign Chemists), Ltd., 15 Great St. Andrew Street, London, W.C.2, are the distributors in Great Britain and the Irish Free State for Optrex eye lotion. The use of this



product is to be advocated by means of an advertising campaign as a relief for tired and irritating eyes after strain as the result of modern working conditions and recreations. Optrex is available in two sizes and an eye bath is supplied with each bottle.

INTERNATIONAL LABORATORIES, 10 Phoenix Place, Mount Pleasant, London, W.C.1, announce that Parmint, Carmarole Compound and Karmoid tablets are to be heavily advertised in the near future.

STUDENTS' BOOKS.—The following advertisers in this issue offer books suitable for students:—

Lewis, H. K., & Co., Ltd.  
Livingstone, E. & S.  
Pitman, Sir Isaac, & Sons, Ltd.  
Potter & Clarke, Ltd.  
Prescriber, The.

THE CHEMIST AND DRUGGIST.

EDUCATIONAL INSTITUTIONS.—The following is a list of the educational institutions advertising in this issue:—

Birmingham Central Technical College.  
Bolton Municipal Technical College.  
Bradford Technical College.  
Brighton Technical College.  
Bristol University.  
British Optical Institute.  
Cambridge University Correspondence College.  
Chelsea Polytechnic.  
College of Preceptors.  
Educational Institute of Scotland.  
Glasgow Royal Technical College.  
Harris Institute.  
Heriot-Watt College.  
Huddersfield Technical College.  
Kingston-upon-Thames Technical College.  
Leeds College of Pharmacy.  
Leicester College of Technology.  
Liverpool School of Pharmacy.  
London College of Pharmacy.  
London Hospital Medical College.  
Manchester Tutorial College.  
Manchester University School of Pharmacy.  
Merchant Venturers' Technical College.  
National Association of Opticians.  
National School of Chiropody.  
Northern Polytechnic.  
Nottingham University College.  
Plymouth Technical College.  
Robert Gordon's College.  
Royal Dental Hospital School.  
Royal Dispensary, Edinburgh.  
Royal Veterinary College.  
St. Andrews University.  
School of Pharmacy, The.  
Scurr, C. A.  
South of England College of Pharmacy.  
Sunderland Technical College.  
Wandsworth Technical Institute.  
Westminster College of Pharmacy.  
Wimbledon Technical College.  
Woolwich Polytechnic.  
Worshipful Company of Spectaclemakers.

DUDLEY & CO., LTD., 451 Holloway Road, London, N.7, have issued a new list (C.D.1362) of their latest designs in autumn and winter showcards, posters and tickets, and also a list of shopfittings (No. 1366). Either of these will be sent to our subscribers on request.

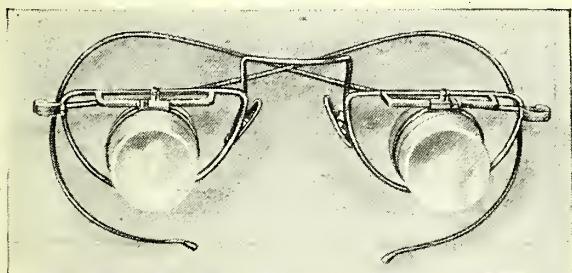
A. BOURJOIS ET CIE, LTD., 4 Water Lane, Blackfriars, London, E.C.4, have made two further additions to the now extensive range of the Evening in Paris series of toilet requisites, namely, solid brilliantine, and a shampoo powder with toning rinser. The shampoo powder is marketed in an attractive display outer containing two dozen.

HOME BREWED BEER.—Nobby's Products, Ltd., County Buildings, 4 Cannon Street, Manchester, are the manufacturers of an extract which makes the brewing of beer or stout the easiest of operations. The extract is sold in 12-oz. and 32-oz. tins, suitable for making twelve pints or thirty-two pints respectively, and in the lid of the tin is the requisite amount of yeast. By this means a sparkling light ale is obtained at the cost of 1d. per pint. Some striking advertising material cards being shown in the accompanying illustration.

"THE BUZZER."—Another addition recently added to the number of house magazines issued by manufacturers connected with the drug trade is that of Cussons, Sons & Co., Ltd., Kersal Vale, and which is issued under the name of "The Buzzer." Among the subjects dealt with are the reading-room and lending library at Kersal Vale; there is a crossword puzzle, a photographic section, and news from South Africa (where the latest Cussons' branch seems to be doing well), sports news and a literary article.

TRANSPORT GUIDE.—Roadway Publications, Polebrook House, Golden Square, London, W.1, have sent us a copy of the 1932-33 edition of the "Roadway Goods Transport Guide" (pp. 544, 12s. 6d.). The Guide forms a complete directory to the motor haulage industry. It contains the name and address of some 12,000 haulage contractors, and shows the type and number of their fleet. There is an index to over 10,000 regular and long-distance services, which run summer and winter to all parts of the country, together with a supplementary list of the local hauliers and carriers.

BINOCULAR MAGNIFIERS.—W. Watson & Sons, Ltd., manufacturing opticians, 313 High Holborn, London, W.C.1, have sent for our inspection a pair of their Speera binocular magnifying spectacles, an illustration of which is shown herewith. In every industry there are occasions when the need for just a little magnifying power for the examination of some article is felt. Ordinary single magnifiers, however, lose the advantage of the binocular vision, and the relative positions of objects cannot be realised. Speera magnifiers are spectacles fitted with prismatic magnifying lenses by which



objects are seen enlarged and in proper relief. The lenses are adjustable for interpupillary distance by means of the special frame, which also allows surrounding objects to be seen normally. The skeleton nature of the frame will be noticed. The intention of this is to permit the wearer to locate ordinary objects or tools on the bench without removing the frame from the face, thus it is possible not only to see through the lenses, but around them when required. The spectacles are made in three powers, the focal length of the lenses being 5, 7 and 10 inches, giving magnifications of 3.5, 2.5, and 1.75 diameters respectively.

## Trade-Mark Applications

The figures in parentheses refer to the classes in which the marks are grouped. A list of classes and particulars as to registration are given in "The Chemist and Druggist Diary," 1932, p. 339.

(From "The Trade Marks Journal," August 3, 1932.)

- "PERMOFOAM"; for medicinal chemicals (3). By W. S. Bauer, 81 Ridgeway, Golders Green, London, N.W.11. 532,319.
- "TAKLIT"; for medicinal chemicals (3) and for perfumery, etc. (48). By Parkinsons, Ltd., Curzon Street, Burnley. 532,836/838. (Associated.)
- "AMLAX"; for a liquid food preservative (42). By J. Crampton & Co., Ltd., 31 & 33 Princess Street, Chester Road, Manchester. 533,056.
- "EAST-LIGHT"; for perfumery, etc. (48). By British East-Light, Ltd., 18 St. Clare Street, Minorities, London, E.1. 532,645.

### APPLICATION AMENDED

According to "The Trade Marks Journal" of August 3, 1932, the specification in Class 48, for No. 519,073, by Parfums Gueldy, Société Anonyme, has been amended to exclude vanishing cream.

(From "The Trade Marks Journal," August 10, 1932.)

- "VETZ," with design of horse with man's head ("Vetz" disclaimed); for a veterinary ointment or embrocation (2). By Beechams Pills, Ltd., St. Helens, Lancashire. 529,330.
- "ZEWIA"; for insecticides, etc. (2). By Zellstofffabrik Waldhof, Sandhoferstrasse 156, Mannheim-Waldhof, Germany. 531,561. (Associated.)
- "DEXENE" on oblong shape; for insecticides, etc. (2). By Era Chemical Co., Ltd., 32 Lime Street, London, E.C.3. 532,756.
- "ARMARG"; for chemicals (2). By A. E. Newman, Lion Hotel, Westbury, Shropshire. 532,973.
- "MAVEX"; for a veterinary medicine (2). By Alice Hodgkinson, "Ivy Bank," Church Street, Uttoxeter. 533,005.
- "DERMATEX"; for preparations for skin diseases (3). By R. H. Davis, 187 Westminster Bridge Road, London, S.E.1. 532,345.
- "VITACAMPER"; for medicinal preparations containing camphor (3). By Kabushiki-Kaisha Takeda-Chobei Shoten, 27 Doshomachi 2-chome, Higashiku, Osaka, Japan. 532,412.
- "CRISOLIPOL"; for medicinal chemicals (3). By May & Baker, Ltd., Church Road, Battersea, London, S.W.11. 532,597.
- "RESPROIDS"; for medicinal chemicals for internal use (3). By G. T. Fulford Co., Ltd., 36 Fitzroy Square, London, W.1. 532,961. (Associated.)
- "ATEMPAN BRAND"; for medicinal chemicals (3). By Norgine Pharmaceutical Products (London), Ltd., 3 & 4 Clement's Inn, London, W.C.2. 532,965.
- "NALGO"; for medicinal chemicals (3). By Hough, Hoscaon & Co., Ltd., 2 Bridge Street, Manchester. 533,041.
- "PABYRN"; for medicinal chemicals (3). By Paines & Byrne, Ltd., 31 Southampton Street, Fitzroy Square, London, W.1. 533,175.
- "ABIETSAN" over device of pine, on seal shape (pine cone device disclaimed); for bath salts and essences (48). By The Abietsan Manufacturing Co., Ltd., Managers Street, London, E.14. 529,474. (Associated.)

## Business Changes

TAYLORS DRUG CO., LTD., are opening a branch in Blackett Street, Newcastle-upon-Tyne.

THE business of Mr. J. H. M. Ellin, chemist and druggist, 1 Rectory Chambers, Newcastle-under-Lyme, has been taken over by Mr. W. Stanier, chemist and druggist, and Mr. B. Browning, chemist and druggist, who have entered into partnership.

*John Bell, Hills & Lucas Ltd.*  
Our COLLOIDAL SUNBURN LOTION  
IS UNIQUE  
Supplied with Chemist's Name and Address.  
*Send for Sample & Prices*  
Oxford Works, Tower Bridge Road, London, S.E.1

**SPIRITS OF WINE**  
DUTY PAID DUTY FREE EXPORT  
ABSOLUTE ALCOHOL  
ORANGE WINE. B.P. SHERRY  
JAS. BURROUGH LTD. 1 Cale Distillery, LAMBETH, S.E.11  
Established 1820

6d. PER BOX **PURITAN SALTS** Trade Mark Rgd.  
A new line advertised with "Nostroline"  
ORDER THROUGH THE WHOLESALER  
MATTHEWS LABORATORIES LTD., Clifton, Bristol.

(Regd.)  
**Felsol**  
for  
**Asthma**  
Continuous Propaganda conducted  
with the Medical Profession.  
P.A.T.A. terms upon request.  
**BRITISH FELSON COMPANY, LTD.**  
15, CAROLINE STREET, LONDON, W.C.1

QUALITY PRODUCTS  
TABLETS & PILLS  
Standard or Special Formulae, Packed or in Bulk  
The NETTO—LYSOL  
**Cooper Laboratory**  
Watford  
Telegrams: "Science, Watford."  
Telephone: Watford 3612.

**"Ty-phoo"** (Owned by Sumner's "Ty-phoo" Tea Ltd. Birmingham)  
is the pure "leaf-edge" tea which doctors throughout the country are now recommending to patients with whom ordinary tea disagrees.  
Applications invited for sample and terms for what is claimed to be  
"The best paying line in the trade"  
(This Company is not connected with any other House) (23% on selling price)

**"The Chemist and Druggist"**  
**COMPACT LIBRARY**

**THE PHOTOGRAPHIC CHEMIST.**  
This is a concise guide to chemists commencing and carrying on a photographic department. The book is a reprint of the treatise in THE CHEMIST AND DRUGGIST DIARY, 1926, with additional chapters and formulas. Price 3s. 6d. by post 3s. 8d.

**The "C. & D." PRICE LIST FORMULARY,**  
"P.L.F."  
All users of the C. & D. Retail and Dispensing Price List require a copy of this Formulary. It brings together the formulas for unofficial preparations, the prices of which are quoted in the Price List. It is a choice collection of good formulas for articles in everyday request by the public. Price 2s. 6d. post free.

**PRACTICAL METHODS OF URINE ANALYSIS.**  
This department of chemistry is one which those behind the drug counter can profitably cultivate. The object of this book is to give chemists exactly the information they want on the subject. The book is written by a working pharmacist who is expert in the subject, and has been revised by a M.B. (Lond.). (3rd Edition.) Price 3s. 6d. net, by post 3s. 8d.

**VETERINARY COUNTER PRACTICE.**  
Chemists interested in veterinary practice will find it indispensable, as it deals with the ailments of horses, cattle, sheep, pigs, dogs, and poultry, and the remedies that can be supplied. New edition 1930 (Eighth) brings this book thoroughly up to date. Price 7s. 6d. net, by post 8s.

**THE CHEMISTS' DICTIONARY OF MEDICAL TERMS AND TREATMENT.**  
A small book which explains the meaning of medical terms as to which customers often inquire from chemists. In addition to concise definitions of these technical terms, notes are given on treatment of the more important ailments. Price 3s. 6d. by post 3s. 8d.

**WOOTTON'S CHRONICLES OF PHARMACY.**  
In two vols., maroon cloth, comprising 770 pages. Price 10s. 6d. net, by post 11s. 3d.

Published by "The Chemist and Druggist"  
28 Essex Street, LONDON, W.C.2  
Branch Offices: Manchester and Sheffield, England; Glasgow, Scotland; Melbourne and Sydney, Australia; Auckland, New Zealand

## Information Department

### INFORMATION WANTED

Postal or telephone information with respect to makers or first-hand suppliers of the undermentioned articles will be appreciated.

M/178. Anticide (ant de-stroyer)	B/138. Healo finger bandages
M/168. Carbitol (glycerin substitute)	E/178. Isoli toilet preparations
E/187. Favorite dirt-whisk brushes	H/178. Jolly Boy shaving brushes
	E/187. Night Rose perfume
	F/108. Polyphlogin tablets

THE  
**CHEMIST AND DRUGGIST**  
 VOL. CXVII AUGUST 20, 1932 NO. 2741

### Education Developments : A Wider Outlook

REVIEW of the educational position in pharmacy has for some years had to be confined largely to analysis of examination results and expression of aspirations, as there was insufficient originality in the authorities to suggest the larger theme of equipping graduates to fulfil something more important than the dispensing of medicines and the guarding of potent poisons. The growth of a more varied *materia medica* showed a tendency to leave pharmacy high and dry to keep open shop, while others, more creative, were encroaching steadily on what might be considered the pharmaceutical preserves—the study, preparation and presentation of all medicaments needed by the clinician to restore to health or to combat disease. At the same time it is as well to consider the relative results of the July examinations of 1932. The entrants for the Chemist and Druggist Qualifying examination in London were 502, against 527 in 1931; 255 passed, the same number as last year. In the Preliminary Scientific examination 515 entered, against 520 last year, with 137 successful and 248 failures, against 143 and 250 respectively in 1931. It appears that "refers" were more numerous, indicating some slight improvement in reduction of total rejections. Failures in the Qualifying examination in botany, a subject of discussion on the Pharmaceutical Society's Council last year, were 331; this year the number is 232. Chemistry shows 198 failures against 226, and physics 196 against 240. The refers in particular subjects were:—Pharmacognosy, 222 against 18; pharmacy, 49 against 36; pharmaceutical chemistry, 43 against 69; forensic pharmacy, 2 against 11. The failures show swollen figures, as a candidate who is referred in two subjects obviously fails in all. In a general sense we may feel some progress has been made; it may not be great, but it is there. The quality test would be one that showed how many passed at their first attempt; but as these figures are not available, we must accept the approximation as more comforting than in the previous year.

#### The End-Value of Vocational Education

More and more it has become necessary to consider the particular component parts comprehended in the term "pharmacy," and try to get some idea of what is to happen to all these pharmacists qualifying annually. Vocational education without an end-value is a disappointing thing. It has become clearer during the past few years that true pharmacy was slowly being pushed into the background by an out-of-date Pharmacopoeia. In the new regulations provision is made for recognition of training in a manufacturing pharmaceutical laboratory; the term is a narrow one, but it is to be hoped a wide and

generous interpretation will be allowed to this proposition, accepted four years ago by a Conference delegates' meeting. A review of the requirements set forth in this issue provides nothing new, but it is better to construct methodically and cautiously than spoil everything by jerry-building. A new spirit is animating our responsible councillors, though it is more than doubtful whether a popularly elected body of men is an ideal educational authority. The variations in the conditions for the entrance examinations lag behind the necessities of the case, and we must await the passing of more time before a reasonable requirement comes into being. Three other phases may be regarded as an attempt to supply what many practising pharmacists have long felt to be a growing need. The first, which should have a much wider appeal when it is properly understood, is the post-graduate lectures given for one week at the end of July. They were successful within their limitations. A Society with at least fifty large branches could arrange at those centres two lectures by competent authorities on several of the selected subjects during the winter session. It only requires cutting out the peregrinations of councillors on political "stunts" and introducing the phase of modern pharmaceutical developments, a much more useful and practical theme. The other two phases are the post-graduate courses of study with diplomas in food and drug analysis and biological analysis. These two subjects are still in the air, so to speak, but they are both essential to a wider outlook in pharmacy. One other phase is more important because it is immediate in its effects—we refer to the British Pharmacopoeia. It has been said, and bears repeating, that the pharmacopoeia of a country conditions pharmacy. That being so, a new phase for pharmacists will open when the 1932 B.P. becomes official in October. The contents of the volume become the basis of training in pharmacy, pharmaceutical chemistry and other cognate subjects, and a revised orientation is a necessity. This is the chief factor in the educational development for 1932—the wider outlook. Dispensing of prescriptions acquires greater importance through the more extensive official recognition accorded to drugs in common use, and different values arise. Many of the drugs have been known through the B.P.C. by the names now made official, but others were used as branded articles with unfixed standards.

#### A Pharmacists' Pharmacopœia

The new Pharmacopœia is essentially a pharmacists' pharmacopœia constructed from the medicaments asked for and required by the physician. Apart from using it as a text-book for the pharmaceutical examinations in the latter part of next year, there arises the necessity for a wider distribution of the knowledge offered in the post-graduate lectures and demonstrations previously mentioned. An examination of the list of new official drugs set out in our pages fully justifies chemists in pressing for more extensive spreading of official information through educational lectures during the coming winter session. The reaction of the Pharmaceutical Council to this subject will be an index of their readiness to fulfil

a function previously denied them by the 1914 Pharmacopœia. In the requirements of pharmacy in the Bachelor of Pharmacy syllabus we find:—

"The principles of sterilisation; sterilisation of apparatus and materials. Preparation of aseptic and antiseptic dressings; determination of the proportion of wool and cotton in dressings made from mixed fibres. Enzymes and their action in the manufacture and preservation of pharmaceutical preparations. An elementary knowledge of vaccines and sera and the methods by which they are prepared and standardised."

These things, for the most part, are now official in the Pharmacopœia, and can be read therein, but a wider outlook in education requires provision for lectures on these and ancillary subjects which pharmacists need for the proper exercise of their profession. In this wider need (recognised by the medical profession) for post-graduate knowledge and experience we suggest that the Pharmaceutical Council should organise training. We understand that the new British Pharmaceutical Codex will show a development commensurate with the new Pharmacopœia. It would perhaps be too much to affirm that a new era in pharmaceutical educational development has opened, but at any rate a wider outlook and a more complete justification of pharmacy is placed before chemists. Our educational policy should be not for students only, but for graduates also, as scientific advances are too important to be buried in current literature; they must become living knowledge to be effective. Educational developments require, in the interests of the community, a wider outlook: then pharmacy will acquire a more substantial position in the national scheme.

### Pharmaceutical Scholarships

The trustees of the Fairchild scholarship and prizes set up this year a new standard, to which attention may be called. Nominally, the standard prevailed in the last two years, but relief was given: the standard is that all entrants for the scholarship shall have completed the Preliminary Scientific or another science examination. In the June examination of this year the requirement was rigidly applied; and though the numbers fell, the results of the examination in science subjects was markedly higher. That is surely the best justification for the policy designed by the trustees. The pity is the Pharmaceutical Society's Council still lags behind owing to some archaic notion that it must not be too hard on those who have just missed taking the Preliminary Scientific examination. The qualifying examinations are so adjusted nowadays that to allow any one to begin the course who has not completed his science examination is to cripple the scholar. It is no answer to say, "It usually works out all right," as students are tempted to make attempts in the hope of something turning up—a bad principle in education. The trustees of the Fairchild scholarship and prizes are to be congratulated in being fair to the candidates. Perhaps the Pharmaceutical Council will follow the logical method adopted. The numbers of candidates for scholarships this year appears to be lower; and from the reports available there appears a weakness in botany and a marked one in business knowledge which has had a disproportionate effect on total marks. In botany no explanation is forthcoming; but until employers take their apprentices and assistants more into their confidence on the conduct of business, one must expect these variations in business knowledge. Unfortunately every text-book on the subject becomes too discursive on the phases required by "big business."

There is a need for a simplified book on business knowledge for the retail distributor; and until a book of this kind is published great variation in elementary business knowledge will still continue to be shown in the examination room. The various scholarship conditions are set out in this issue; and we would urge all apprentice masters and employers of eligible assistants to encourage them to study for one or more after their science examination is out of the way. It is a tribute to these founders of scholarships that, almost without exception, the successful candidates qualify at their first attempt and afterwards acquire positions commensurate with their merits.

## Books for Students

Each college principal has a preference for certain textbooks which students are required to use. The following list contains some of the popular text-books for pharmaceutical students:—

### BOTANY

- "Pharmaceutical Botany" (*C. & D. Office*), 5s.
- "Botanists' Pocket Book," Hayward, revised by G. C. Druse (Bell), 5s.
- "Practical Botany for Beginners," Bower and Gwynne-Vaughan (Macmillan), 4s.
- "Text-book of Botany for Medical and Pharmaceutical Students" and "Practical Botany," James Small (Churchill), 21s. and 10s. 6d. respectively.
- "Botany for Students of Medicine and Pharmacy," Fritch and Salisbury (Bell), 10s. 6d.

### CHEMISTRY

- "Elementary Inorganic Chemistry," James Walker (Bell), 5s. (suitable for beginners).
- "Text-book of Inorganic Chemistry," Senter (Methuen), 7s. 6d.
- "Modern Inorganic Chemistry," Mellor (Longmans), 12s. 6d.
- "Text-book of Inorganic Chemistry," Newth (Longmans), 8s.
- "Theoretical Organic Chemistry," Cohen (Macmillan), 7s.
- "Inorganic Chemistry," Lowry (Macmillan), 20s.
- "Volumetric Analysis," Hampshire (Churchill), 7s. 6d.
- "Elementary Analytical Chemistry," Arnall and Appleyard (Churchill), 6s.

### PHARMACEUTICAL LATIN AND PRESCRIPTION-READING

- "Latin Grammar of Pharmacy," Joseph Ince (Baillière), 7s. 6d.
- "Medical and Pharmaceutical Latin for Students of Medicine and Pharmacy," R. R. Bennett (Churchill), 10s. 6d.
- "Aids to Pharmaceutical Latin," G. E. Trease (Baillière), 3s. 6d.

### MATERIA MEDICA

- "Materia Medica," Southall, revised by E. W. Mann (Churchill), 12s. 6d.
- "Text-book of Materia Medica," Greenish (Churchill), 25s.

### PHARMACY

- "British Pharmacopœia," 1932 (Constable), 21s. (Published on September 30.)
- "British Pharmaceutical Codex" (Pharmaceutical Society), 30s.
- "Practical Pharmacy," Lucas (Churchill), 27s.
- "Text-book of Pharmacy," Bentley (Baillière), 15s.
- "Essentials of Pharmacy," Wootton (London College), 5s.
- "Art of Dispensing" (*C. & D. Office*), 8s.
- "Forensic Pharmacy" (Pharmaceutical Society), 3s. 6d.
- "Dispensing for Pharmaceutical Students," Cooper and Dyer (Pitman), 7s. 6d.

### PHYSICS

- "Practical Physics," Allen and Moor (Macmillan), 10s. 6d.
- "Text Book of Physics," Duncan and Starling (Macmillan), 18s.
- "Manual of Physics," Crowther (Oxford University Press), 14s.
- "Principles of Physics," Smith (Arnold), 9s.

# EDUCATIONAL INFORMATION

## Pharmacy GREAT BRITAIN

THE examinations of the Pharmaceutical Society are written and practical, with a nominal oral in pharmacy and pharmacognosy. The regulations have been amended in certain particulars for April 1933, but these need not worry any candidate, as they are simply a clearing of the ground of encumbrances which have long lost their meaning. Modifications advisable for the student will be shown in their appropriate places. Since the introduction of the written method of examinations a new phase has been presented at almost every examination. Apart from one or two glaring cases, the notebook question has been solved, though it appears there is a tendency to exaggerate the question of notes, with the idea that it is impressive. It is not so, as any examiner can easily detect exaggeration in keeping note-books of work done. Neatness and care are advisable, but copy-book illustrations are anathema to a commonsensible examiner. At the same time neatness should be an expression of the mind; and in this way the pathway of clarity in practical work is found.

The written part precedes the practical, and provision is made to hold the examinations at various centres throughout the country in order to prevent unnecessary travelling. The practical takes place in London and Edinburgh only, and is arranged to follow the written as soon as practicable. Students who have passed recognised science examinations equivalent to the Preliminary Scientific have many advantages; a good foundation is laid for future progress. Beginnings are always difficult in pharmacy as elsewhere, and a good beginning is a bright inspiration towards easier progress. It would be wrong to assume that three years have been sufficient to wipe out memory of the old system of examinations. The ideas linger with parents, but the sons of to-day must think differently. The examinations are a better test for efficiency of the practical kind, cutting out almost completely that type of person who could bluff his way through an examination on a minimum of knowledge. It should not be assumed that everything is ideal; but good progress has been made, and as the years pass a more efficient type of pharmacist cannot fail to eventuate.

### Chemist and Druggist and Pharmaceutical Chemist Qualification

(IN BRIEF)

1. Notification and registration with the Pharmaceutical Society of having passed an approved Preliminary examination.
2. Apprenticeship (indentured), during which provision should be made for attendance in approved technical institutions of chemistry 200, botany 120, physics 120 hours.
3. Preliminary Scientific examination in chemistry, botany and physics.
4. Complete the necessary 4,000 hours' experience in an open shop, approved public institution or wholesale laboratory, during which, or after, spend 300 hours in pharmacy, 120 hours in pharmacognosy, 300 in pharmaceutical chemistry, in school, or 2,000 hours if proceeding for pharmaceutical chemist only, and collegiate hours: pharmacy 620, pharmacognosy 270, chemistry 440, botany 270.
5. At the age of 21, or thereafter, Chemist and Druggist Qualifying examination in pharmacy, pharmaceutical chemistry, pharmacognosy, forensic pharmacy; or pharmaceutical chemist qualification in pharmacy, pharmacognosy, chemistry, botany, and forensic pharmacy.

some suitable form in the subject of pharmaceutical chemistry were given to analysis of poisons and laws relating thereto, forensic pharmacy would be something better than a makeshift for the man who has won his B. Pharm., and the additional examination in this subject would be redundant.

We recommend that use should be made in the pharmacy, wherever possible, of the syllabus, or parts of the syllabus, outlined in the following pages. The preparation of galenicals is a rare thing in the shop routine, but the possibility of making small quantities should not be overlooked by the employer, as it is of vital consequence to the apprentice. No one should take an apprentice unless he is prepared to train in the routine of pharmacy as well as in business methods; to do so is subversive of the legitimate claims of the apprentice. It not only makes a difference in knowledge and experience, but also renders it easier to manipulate appliances in the practical work when an examiner is investigating. The employer should arrange the work to provide a thorough grounding. It is also advisable for eligible students to train and enter for the scholarships now available.

The number entering pharmacy through a matriculation standard is increasing satisfactorily, which should be gratifying to those who struggled for such recognition, as well as those who were doubtful of success. It is curious, but true, that the Ph.C. is valued more highly at the present moment than the B. Pharm.; but this is more likely to be a stage in progression than a final adjustment. The highest qualification in pharmacy may easily pass from the Pharmaceutical Society to the University, as in medicine.

The number of schools recognised for the training of students for university standard is now at a reasonable figure, and any increase is likely to produce reduction of value rather than otherwise. The syllabus for the Intermediate examination of the University in science differs from the Preliminary Scientific in pharmacy; an outline is set out under the University degree. London University, whether "internal" or "external," provides, despite its abnormal length of examination, a progressive method of advancing the profession of pharmacy, out of which all phases obtain some benefit. The only difference between a Ph.C. examination and a B. Pharm. examination is in forensic pharmacy, which in its present form is foolish for practical requirements. If

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## Preliminary Examinations

The first step on deciding to take up pharmacy is to secure a certificate covering the following subjects:—(a) English; (b) arithmetic, algebra, geometry; (c) a language other than English; (d) another language or one of the following subjects—higher mathematics, experimental mechanics, chemistry, physical geography, physics, botany, biology, geology. These subjects must have been passed at not more than two examinations of the same examining authority. The registrar is empowered to accept certificates fulfilling these requirements when obtained from any examining authority specified below. Should the compulsory subjects, with the necessary additional ones, have been passed at not more than two examinations in any institution not included in the list, such certificates may be submitted for consideration by the Council. In general terms, the certificates submitted must be of equal value to those specified in the list. The list of certificates at present accepted is given below. Any student entering pharmacy and desirous of obtaining a degree through the London University must pass its matriculation examination.

### LIST OF CERTIFICATES ACCEPTED

The following is a list of the principal certificates accepted:—

*The Final examination for a degree of any University in the United Kingdom approved by the Council.*

*Queen's University, Belfast.*—Matriculation Examination.

*Universities of Birmingham, Leeds, Liverpool, Manchester, and Sheffield.*—Joint Matriculation Examination. School Certificate Examination.

*University of Bristol.*—Matriculation Examination. School Certificate Examination.

*University of Cambridge.*—Senior Local Examination, Higher Local Examination. Previous Examination, General Examination.

*College of Preceptors.*—Senior Certificate Examination. Preliminary Examination for pharmaceutical students.

*University of Dublin.*—Any one of four specified examinations.

*University of Durham.*—First School Certificate Examination. Matriculation Examination.

*Universities of Scotland.*—Preliminary Examination in Arts, Medicine, or Science. Final Examination for LL.A. St. Andrews.

*Intermediate Education Board for Ireland.*—Senior or Middle Grade Examination. Leaving Certificate Examination.

*Educational Institute of Scotland.*—Medical Preliminary Examination. Professional Preliminary Examination.

*National University of Ireland.*—Matriculation Examination.

*University of London.*—Matriculation Examination. Senior School Examination. General School Examination.

*University of Oxford.*—Senior Local Examination. Higher Local Examination. Responsions. Moderations. *Oxford and Cambridge Schools Examination.*—Higher or School Certificate Examination.

*Scottish Education Department.*—The intermediate Certificate or Passes in the Higher or Lower Grade of the Leaving Certificate Examination.

*Central Welsh Board.*—Senior Certificate Examination.

*University of Wales.*—Matriculation Examination.

*English Board of Education.*—First School examination certificate to include a "pass with credit" in English, and in one language in Group II or in mathematics, or mechanics, or physics, or chemistry or botany in Group III.

If a student has passed an entrance examination of any other body not referred to in the above list (which he will be somewhat modified as from April 1, 1933), he should submit the certificate to the Registrar of the

Pharmaceutical Society, 17 Bloomsbury Square, London, W.C.1. The list of accepted certificates covers the Empire's universities, so that the conditions practically apply only to foreign institutions. It may generally be said that two certificates to cover the whole examination are alone accepted. If the student has not already passed one of the examinations his apprenticeship is of no value until he has acquired the necessary certificate. The favourite examinations for pharmacy students are the certificate of the College of Preceptors, London, and the professional preliminary examination of the Educational Institute of Scotland.

**THE COLLEGE OF PRECEPTORS**, Bloomsbury Square, London, W.C.1, holds examinations for junior preliminary certificates four times a year at local centres, a list of which is issued two months before each examination. Entry forms, obtainable from the secretary of the College, must be filled up and returned six weeks before the day appointed for the examination. On the form the candidate indicates the subjects in which he desires to be examined, those required for pharmaceutical students being mentioned at the beginning of this section. The fees are best sent with the entry forms, but, if not, must be paid twenty-eight days before the examination begins. Candidates should obtain the regulations for examinations (post free) from the secretary of the College, as the books to be studied in some of the subjects vary from year to year. A complete set of papers at previous examinations can be obtained from the College at 2s. 2d., post free.

**EDUCATIONAL INSTITUTE OF SCOTLAND** (Registrar's Office, 47 Moray Place, Edinburgh) holds a preliminary examination for pharmaceutical students four times a year in Edinburgh, Glasgow, London, Liverpool and Dublin. The fee is £1 1s., and should be sent to the Registrar with the form of application duly filled in. Exemption can be claimed from subjects already passed on a Leaving certificate. The Institute issues a calendar giving the regulations and examination papers, which can be obtained from the Registrar, price 1s.

A certificate of having passed a preliminary examination complying with the conditions having been obtained, it should be sent to the Registrar, the Pharmaceutical Society, 17 Bloomsbury Square, London, W.C.1, accompanied by a fee of two guineas, the student being then registered as an "apprentice or student."

Registration is insufficient in itself, articles of pupilage must be taken up and filed, copies of which can be obtained from the Registrar at the same time. Apprenticeship may be served with a pharmacist, firm, or body corporate, or in an institution recognised by the Council of the Pharmaceutical Society. Apprenticeship in wholesale houses is not yet recognised. The specified number of hours required to be spent in an open shop or approved public institution is 4,000. The student who chooses to follow the course mapped out for a pharmaceutical chemist will be required to serve 2,000 hours in a shop kept open for the retailing, compounding and dispensing of poisons or the dispensary of a hospital or similar institution approved for the purpose, and must also enter into appropriate articles of pupilage. In addition, a recognised course of study must be taken before the Preliminary Scientific examination can be undertaken, and consequently a further sequence in college for the Qualifying examination.

The following modifications in the Pharmaceutical Preliminary examinations apply to students on and after April 1, 1933, and up to April 1, 1936. The certificate must show that the examination was passed at not more than two examinations of one board. The subjects are : A. English; B, mathematics (arithmetic, algebra, geometry); C, a language other than English; D, an additional language or one of the following subjects: Higher mathematics, chemistry, physics, botany, biology, geology. Before or after April 1, 1936, (a) a certificate of having passed the final



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examination for a degree of any university in Great Britain or any other approved by the Pharmaceutical Council; or (b) a certificate of matriculation or any other examination admitting to a course for a degree of any university in Great Britain or any other university approved by the Pharmaceutical Council will be recognised. The certificate must include mathematics.

A person over twenty-five years of age may apply to be admitted to a special preliminary examination; he must furnish such particulars of his education as the Council of the Society may require. Fee, including registration as apprentice or student, £4 4s.

### The Technical Examination

The Board of Examiners sits in London and Edinburgh in January, April, July and October for the purpose of conducting the statutory practical and (in two subjects) oral examinations. Prior to these times the written portion of the examinations must be taken at the appropriate centres. For the Pharmaceutical Chemist examination the Board sits in January and July only. The first part includes botany, chemistry and physics, and is called the Preliminary Scientific, the second pharmacognosy, pharmacy, pharmaceutical chemistry, dispensing and forensic pharmacy. Its specific name is the Chemist and Druggist Qualifying examination. For the purpose of simplification the Pharmaceutical Chemist qualification is dealt with separately under that heading.

The Preliminary Scientific should be taken between the ages of eighteen and twenty-one; the Qualifying examination can only be taken after the age of twenty-one has been reached.

The fee payable for the Preliminary Scientific is six guineas, and the conditions are: The candidate must have spent the requisite number of hours in botany, chemistry and physics in an institution approved for the purpose by the Pharmaceutical Society's Council. If a candidate is referred in one subject only he may re-enter for that one only. Two "refers" are equivalent to a failure in all. The re-examination fee is £4 4s. A candidate who has failed to attend an examination at the appointed time must pay an additional fee of £2 2s. unless prior to the examination a medical certificate of unfitness is lodged with the Secretary of the Pharmaceutical Society.

Having passed each subject in the Preliminary Scientific and completed 4,000 hours, not less than two years, in an open shop or approved public institution and reached the age of twenty-one, the candidate should send a birth certificate together with another fee of £12 12s., and the necessary declaration of having completed the conditions, on the prescribed form, to the Registrar. The examination is conducted on similar lines, and success in all subjects entitles the candidate to be registered as a chemist and druggist by examination.

All candidates have the choice of being examined in the practical portion of the examination in London or Edinburgh, and they are required to state the venue desired when filling up the entrance form.

### The Examination Syllabuses

The official syllabus of the Pharmaceutical Society for the Preliminary Scientific is set out, though examinations in lieu of this may be taken in approved institutions.

#### Preliminary Scientific

##### BOTANY

Morphology, including anatomy. The external form of plants: Thallus, root, stem, leaf. The distinguishing features and commoner modifications of these structures. Buds and vernation. Principles of branching and different kinds of branch systems. Phyllotaxis and branching. Inflorescence, flower, fruit. Pollination. Self and cross fertilisation. The formation of the seed. Germination.

general acquaintance with the elements of plant anatomy; the vegetable cell (tissues, e.g., meristematic, epidermal, fundamental and vascular). The characteristic anatomical features of roots, stems and leaves of flowering plants and ferns. The methods of increase in thickness of stems and roots, and the characters of primary and secondary tissues.

The elements of physiology. The nature and source of the food of plants, and the manner in which the raw materials are elaborated. Chlorophyll, its manner of occurrence in the plant; its functions and the conditions under which it discharges them. Reserve materials, their nature, mode of deposition, and the manner in which they are utilised by the plant. The manner in which plants grow, and the conditions necessary for the growth of a plant. The manner in which plants respond to external stimuli—e.g., light, gravity, etc. Sexual and asexual reproduction.

A good pocket lens and a handy guide like "Pharmaceutical Botany" (C. & D. Offices), is a stimulus to a practical study of botany. Animal life is not needed save to those who are studying biology, but plant life offers many of the same principles; and though it might almost be called "still" life, it provides many an answer to questions in the principles of physiology. One can get into one's mind a real understanding of physiological principles without confusion by the uncertain elements seeking for nutrition, which induce modification. Botany can be a fascinating study, and plant-cell life a revelation of what mobility brings into the organism in its food search. It means better understanding of life; for this, botany is intensely interesting, fundamental and easily studied. In an examination where an examiner can test one's accuracy, it should become a reality of observation and expression. The present tendency is to emphasise this phase, observation and expression often coupled with experiment. Field botany is still extremely useful; it has a charm all its own. If pharmaceutical students could get this zest, the criticisms of examiners would vanish, as well as the failures to satisfy. Botany is life, and the student who appreciates that is on the sure way to success.

**Classification.**—A general knowledge of the chief divisions of the vegetable kingdom, including a special study of the plants and families named.

##### THALLOPHYTA.

*Alga*:—*Spirogyra*, *fucus*.

*Fungi*:—*Agaricus*, *saccharomyces*, *bacillus*.

##### BRYOPHYTA.

*Funaria* and *Pellia*.

##### PTERIDOPHYTA.

*Dryopteris felix-mas*.

##### SPERMOPHYTA.

*Gymnospermae*:—*Pinus*, with only the general external features of *Cycas* and *Taxus*.

*Angiospermae*.

*Dicotyledones*.—*Ranunculaceæ*, *Cruciferæ*, *Leguminosæ*, *Umbelliferae*, *Composite*, *Scrophulariaceæ*, *Labiatae*, *Solanaceæ*, *Salicaceæ*.

*Monocotyledones*:—*Graminaceæ*, *Liliaceæ*.

**Practical Examination.**—To dissect, examine and describe any plants or parts of plants, and to refer to their systematic position any plants belonging to the above-named families. To prepare for the microscope and describe sections illustrating the anatomy mentioned above, and to bring to the examination his original laboratory note-books.

### CHEMISTRY

An elementary knowledge is required of the following subjects:—

- (a) The chief characteristics of chemical action, the distinction of elements and compounds; the laws of chemical combination by weight and volume; the hypothesis of Avogadro; atomic weight and molecular weight; chemical formulas and nomenclature; valency; the distinction between metals and non-metals, and the periodic classification of the elements.
- (b) The general characters of the non-metals; the chief methods of preparation and the typical reactions of the following non-metallic elements and compounds: Hydrogen, oxygen, ozone, water, hydrogen peroxide, chlorine, bromine and iodine, and their compounds with hydrogen and oxygen; fluorine, hydrofluoric acid, nitrogen, ammonia and ammonium compounds, the oxides

of nitrogen, nitrous acid, nitric acid; sulphur, hydrogen sulphide, sulphurous and sulphuric anhydrides and acids, thiosulphuric acid; phosphorus, the oxides and oxy-acids of phosphorus, the chlorides of phosphorus, silicon, silica, boron, boric acid. (e) The general characters and classification of the metals, and the general methods of forming oxides and salts; the sources, the usual method of extracting and the chief properties of the under-mentioned metals, also the modes of preparation, properties, adulterations and contaminations of their principal compounds: Potassium, sodium, lithium, barium, strontium, calcium, magnesium, zinc, aluminium, iron, chromium, manganese, nickel, cobalt, arsenic, antimony, tin, copper, bismuth, lead, silver, mercury, gold and platinum. (d) Carbon, its oxides, methane, ethylene and acetylene. The candidate will also be expected to possess a general knowledge of the methods of estimating carbon, hydrogen, oxygen, and nitrogen in organic compounds, and of obtaining molecular formulae. The candidate is expected to solve simple problems relating to the weight and volume under different conditions of temperature and pressure of elements and compounds concerned in chemical reactions.

*Practical Examination.*—To exhibit a practical acquaintance with the methods of preparing the more important inorganic substances. To identify by chemical tests the more important non-metallic elements and their compounds, as well as the metals and salts indicated in the foregoing list. To analyse a mixture containing not more than two basic and two inorganic acid radicles. To understand the principles of volumetric analysis, and to prepare and standardise, and use volumetric solutions of inorganic acids, salts, alkalis, potassium permanganate, and silver nitrate. The candidate will be required to bring to the practical examination his original laboratory note-books for inspection.

Chemistry is a practical subject learned in the laboratory. The lectures indicate the way, and the demonstrator should keep the student in the narrow way to observe rules and method in order to get correct results. Chemistry is an exact science, and requires exactitude in its treatment. The examination consists of a written paper of eight questions of which only six must be answered, and it is safe to say those six questions require clear thinking to answer. Close scrutiny of many examination papers shows that the art of expression of thoughts in writing so that the reader easily understands rather than struggles to fathom a meaning is not a pharmaceutical accomplishment. At the same time, much can be acquired in the way of expression by taking the questions set at previous examinations, writing out the suitable answers and comparing with the text-book. A critical comparison and condensation of replies into direct statement will do much towards acquiring a style in this as well as in cognate subjects. Writing out and correcting by a given authority should make for exactness and lucidity. That is a phase of chemical practice and teaching.

Note-books are necessary and are insisted upon in all schools; but it is not wise to use a note-book as though it was for copied matter frequently repeated. The object of a note-book is to record the experiments made or the tests applied, and state simply the conclusions reached. More than this is a waste of time and mentally confusing should these books be used for revision. Great attention should be given to the teacher's corrections, as the time to acquire an understanding of chemical methods in synthesis or analysis is when the work is done and found correct or incorrect.

#### PHYSICS

Candidates are required to possess an elementary knowledge of:—

(a) Units; mass; weight; the balance, force, energy and work; levers and pulleys; gravity; centre of gravity; distinctions between solids, liquids and gases; transmission of pressure in liquids; water-pumps; the siphon; Boyle's law; atmospheric pressure; barometers; air-pumps; diffusion; dialysis; specific gravity; vapour density.

(b) Temperature; thermometry; changes in volume of solids, liquids and gases, with alterations of temperature;

quantity of heat; specific heat; change of state; latent heat; boiling and freezing points; vapour pressure.

(c) Propagation of light; laws of reflection and refraction; photometry; simple properties of mirrors, lenses and prisms; the eye as an optical instrument; the principles of the correction of errors of vision by means of lenses.

(d) Simple properties of magnets; simple phenomena of static electricity; electric currents; primary and secondary cells; the magnetic chemical and heating effects of currents; Ohm's law.

*Practical Examination.*—To perform simple experiments, solve simple problems, and to show a knowledge of the construction and use of physical apparatus, so as to illustrate the subjects detailed above. The candidates' original laboratory note-books will be required.

The examination in physics consists of a written paper of three hours, covering a choice of seven questions from ten set, and two hours' practical manipulation and display of technical knowledge to the satisfaction of the examiners. The introduction of professional examiners has had material effect on the teaching in this subject. Considerable improvement is shown in the technique; and as it is a subject appealing to the practical mind there is no reason why further improvement should not be exhibited. There is still room for further advance in technical equipment where the individual operates rather than in class experiment; and if this can be done, most of the fears of candidates in physics will vanish.

#### EXTERNAL EXAMINATIONS IN PHARMACY

Apart from the examinations of the Pharmaceutical Society's examiners as set out in the above syllabus, there is a proviso for the acceptance of certificates in lieu of the Preliminary Scientific. At present the specification is vague, since no schools are approved and certificates are considered on their merits. They are: (1) The Final or Intermediate examination of any University in England and Wales, or equivalent examination in a Scottish University approved by the Pharmaceutical Council. (2) The Higher School Certificate examination conducted by an examining body approved by the Board of Education for subjects taken as principal subjects. The fee on acceptance of these certificates is £2 2s., and subsequently the same regulations apply as to the Pharmaceutical Society's examinations.

#### Qualifying Examinations

##### PHARMACOGNOSY

The details of the syllabus are as follows:—

To recognise specimens of crude drugs mentioned in the British Pharmacopœia or in the annexed list; to be acquainted with their botanical, zoological and geographical sources, commercial varieties, the natural orders to which they belong, and the mode of collection and preparation for the market; to indicate the morphological nature of such as are organised, and the mode of formation of such as are unorganised; to describe them correctly, and to point out diagnostic characters, either chemical or physical, the latter so far as they can be ascertained by the use of a lens. To name the chief active constituents of official drugs, to know the proportion present in good samples of the more important of them, and to possess a practical knowledge of any pharmacopœial tests or processes of assay applied to crude drugs or their official products.

Agar-agar	Chrysanthemi cinerariæfolii	Fœni-græci Semina
Alkanæ Radix	Flores	Fucus vesiculosus
Altheæ Radix	Cimicifugæ	Galbanum
Amomi Meleguetæ	Rhizoma	Guarana
Semina	Cocæ Folia	Gutta-percha
Arecae Semina	Cocculus Indicus	Hellebori nigri
Arnicæ Rhizoma	Conii Fructus	Rhizoma
Cacao Semina	Convallariae Flores	Hyoscyami Semina
Cambogia	Croceus	Ignati Semina
Canella Cortex	Cumini Fructus	Inula Radix
Calendulaæ Flores	Cydoniæ Semina	Iridis Rhizoma
Cantharis	Elateriæ	Laca
Cassiae Cortex	Eucalypti Folia	Lauri Fructus
Cetraria Islandica		Lupulus
Chondrus crispus	Euphorbiæ	

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Lycopodium	Piper longum	Scammonium
Manna	Piper nigrum	Sinapis Albae
Mastiche	Pix Burgundica	Semina
Moschus	Quercus Cortex	Sinapis Nigræ
Mylabris	Rhamni Frangulae	Semina
Olibanum	Cortex	Stramonii Semina
Papaveris Capsulae	Sabinæ Cacumina	Sumbul Radix
Physostigmatis	Sandaraca	Tonco Semina
Semina	Sanguinariae	Ulmi fulvæ Cortex
Pilocarpī micro-	Rhizoma	Vanillæ Fructus
phylli Folia	Sanguis Draconis	Veratris albi
Pimenta	Sarsæ Radix	Rhizoma

The candidate is also required to recognise any of the plants in the following list:—

Aconitum Napellus	Digitalis purpurea	Pinus sylvestris
Althea officinalis	Dryopteria Filix-	Prunus Lauroceras-
Anthemis nobilis	mas	sus
Atropa Belladonna	Feniculum capil-	Quercus Robur
Avena sativa	laceum	Rosa canina
Brassica alba	Hordeum distichon	Rosmarinus offi-
sinapioides	Hyoscyamus niger	cinalis
Bryonia dioica	Juniperus com-	Ruta graveolens
Cochlearia	muniis	Salix alba
Armoracia	Juniperus Sabina	Sambucus nigra
Colchicum	Lavandula vera	Solanum Dulce-
autumnale	Matricaria	mara
Conium macula-	Chamomilla	Taraxacum offi-
tum	Mentha piperita	nale
Cytisus Scoparius	Mentha Pulegium	Taxus baccata
Daphne Laureola	Mentha viridis	Triticum vulgare
Daphne Mezereum	Œnanthe crocata	Ulmus campestris
Datura Stramo-	Papaver Rhoeas	Valeriana offici-
nium	Papaver somni-	nalis

Collection of crude drugs by the student is not nearly so common as it used to be; but it has become more than ever necessary, as there is real work to be done. In theory there is no practical examination such as pertains in chemistry, but in reality there is something equally exacting. Recognition of easily defined roots, leaves, rhizomes, etc., is almost a thing of the past, and the candidate is expected to apply certain diagnostic tests to those drugs easily responsive and to characterise with greater exactitude certain definable drugs. In this subject candidates are finding unsuspected difficulties, and failures have become more numerous. Pharmacognosy now stands an easy first for rejected candidates in the technical part of the examination for a chemist and druggist. The written paper allows three hours for six questions out of eight. The range covers writing out the characteristics of a specified drug and frequently giving sketches to illustrate the answer. Methods of collection and storing and a knowledge of constituents are required. The oral allowed a succession of interrogations, but this is now condensed into a limited number of questions. The margin of error is lessened, and the candidate is less able to spread himself in trying to recover from defective observation. The practical work consists of the recognition of half a dozen or more specimens; the answers are written, together with such other information as is requested. Diagnostic tests for powdered drugs and the use of the microscope for the identification of well-defined powders are required, all which tends to show that this subject is raised to a plane which previously it did not occupy. If candidates will remember this during the scholastic period and adapt their methods of treating the subject accordingly, the number of rejections should be materially reduced.

## PHARMACY

**I Pharmacy (General).**—Operations requiring the use of heat. Evaporation, with particular reference to the preparation of extracts; special characters and modes of preparing the various classes of extracts; influence of surface, temperature and pressure upon the rate of evaporation; water, steam, and sand baths; distillation, ordinary, fractional, steam, and destructive, distinctive characters and objects of each; official preparation illustrating the various kinds of distillation, apparatus employed, the retort and receiver still and worm. Liebig's condenser, principles on which they are constructed and used. The principles of

sterilisation. Sublimation; its objects and applications in pharmacy; official products of sublimation, calcination, and fusion. Desiccation; temperature best suited for drying particular drugs, loss in drying vegetable drugs, forms of drying ovens, principles on which they are constructed and used. Disintegration of solid substances; cutting, bruising, and pulverisation, apparatus employed, principles indicating which is to be adopted in particular instances; methods for controlling the degree of comminution, sieves and sifting, trituration, levigation, elutriation, granulation, including methods for producing certain chemicals as fine powders, small crystals, scales, etc. Filtration objects and methods, filtering media, means of expediting filtration; dialysis, its application in pharmacy, construction and use of the dialyser. Expression; methods of obtaining the juices from plants; recovery of the residual liquids from tincture mares, etc., screw, hydraulic and other presses. Solution: its nature, solvent power of various menstrua, influences of (a) temperature; (b) state of division of the substance to be dissolved; (c) time; (d) position of the substance in the menstruum; lixiviation, infusion, digestion, and decoction; maceration, percolation, and displacement, principles on which the successful performance of these processes depends; form and materials for percolators and other vessels employed. The principles involved in the dispensing of medicines, particularly with reference to the best excipients and methods for forming pill masses, the preparation and nature of emulsions, the most suitable emulsifying agents and the best means of suspending insoluble substances in liquids. The candidate is also required to show a general knowledge of the processes, and understand the principles of the processes by which official galenical preparations are made, and the principles on which they are based.

The candidate will be required to read without abbreviation autograph Latin prescriptions, translate them into English, understand the grammatical construction, and render a literal as well as an appropriate translation of the directions for use; to detect errors, discover unusual doses, and have a general knowledge of posology; to calculate percentages and other quantities occurring in prescriptions.

**II Practical Pharmacy and Dispensing.**—To perform such operations of the British Pharmacopœia, or such parts of them as may be practicable, involved in the processes for preparing collodions, confections, decoctions, dilute acids, extracts (solid and liquid), glycerins, infusions, juices, liniments, lotions, mixtures, ointments, pill masses, plasters, powders (simple and compound), scale preparations, solutions, spirits, suppositories, syrups, tinctures, vinegars, waters and wines.

To compound and dispense medicines as prescribed; to write the directions in concise language and in a neat and distinct handwriting; to finish and properly direct each package, and to bring original laboratory note-books.

The examination in pharmacy consists of a three-hours' written paper divided into two parts. The first part consists of four questions, all of which must be attempted; two out of part two, in which four further questions are set out, must also be answered. Analysis of the papers set shows that a student must be able to state how particular galenicals are prepared, and to contrast methods, giving where possible the reasons for variations and simple calculations in adjustments of strength, to show a knowledge accompanied by an annotated sketch of some piece of apparatus and a knowledge of the uses of extractives. As this subject is the most important in the examination, great care is needed in the acquisition of accurate knowledge and skill. The number of hours in shop training should be considered as practical pharmacy. There are very few places where such operations as are necessary cannot be performed. It is an easy thing to say that economic conditions preclude practical pharmacy from the shop and leave only dispensing, but that is not quite a true statement. Prescriptions not infrequently present real problems in practical pharmacy, and the apprentice can lay a sure foundation for future success if he accepts those problems as something to overcome rather than shirks them because they are troublesome.

Careful analysis of results in the pharmacy examination in dispensing shows failure to resolve itself into two main causes, casual errors and faulty training. Presence of mind and the sense of awareness in what one is doing



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is the key to overcome casual errors. To double the amount of poison in calculation is fatal to a success more surely than it might be in actual life. Casual mistakes are too frequent in the examination room, and there is no reason why they should occur. Constant repetition of processes will not save the dispenser; he must practise the art of concentration, know his job and cut out all mind wandering. Another thing which shows marked deterioration is pharmaceutical writing. It is slowly drifting towards the slovenliness of medical calligraphy; it is a danger to everyone which should be carefully avoided.

#### PHARMACEUTICAL CHEMISTRY

To have a general knowledge of the preparation, principal properties, and reactions of the following:—Hydrocyanic acid, cyanides, ferrocyanides, ferricyanides, oxalic acid, methyl and ethyl alcohols, acetone, formic and acetic aldehydes and acids, chloral hydrate, chloroform, iodofrom, ether, ethyl acetate, acetamide, aloin, olein acids, soaps, glycerin, lactic acid, citric and tartaric acids, sucrose, dextrose, lactose, starch, salicin, urea, simple urethanes, and ureides. Benzene, phenol, picric acid, phenolphthalein, nitro-benzene, aniline, acetanilide, benzoic acid, salicylic acid, acetylsalicylic acid, salol, gallic acid, tannic acid.

To have a general knowledge of the adulterations and contaminations which may occur in the elements and inorganic compounds included in the British Pharmacopoeia, and such of the organic compounds mentioned above as are included in the British Pharmacopoeia, and the methods by which the purity of these substances is determined.

#### Practical Examination

To identify by chemical tests the following organic compounds:—Cyanides, oxalates, acetates, tartrates, citrates, benzoates, salicylates, starch, sucrose, dextrose, lactose, salicin, cocaine, quinine, morphine, strychnine, and their salts; methyl alcohol, ethyl alcohol, acetone, formaldehyde, glycerin, chloroform, phenol. To detect and identify the adulterations and contaminations which may occur in the elements and inorganic compounds included in the British Pharmacopoeia and in such of the organic compounds mentioned in the list of substances for identification as are included in the British Pharmacopoeia. To perform those volumetric determinations and those requiring the use of a nitrometer which are described in the British Pharmacopoeia. To have a practical acquaintance with the methods of preparing the more important inorganic substances, and also the following organic compounds:—Ether, chloroform, ethyl nitrite, hydrocyanic acid, acetanilide and nitro-benzene, so that he may be able to explain to the examiner the operations involved in their preparations, and, if called upon, to perform the operations or certain stages of them himself.

To determine quantitatively the total alkaloids in cinchona bark and its official preparations, and in the liquid extract of belladonna and its preparations, and in the liquid extract of ipecacuanha; also the strychnine in the extract, liquid extract, and tincture of nux vomica; the morphine in opium and its extract, liquid extract and tincture, any of the above alkaloids in any other preparations

by methods involving principles similar to the above, and the resin in tincture of jalap.

Candidates may consult the British Pharmacopoeia and the British Pharmaceutical Codex, but the necessary information is now given on the paper set, so that it resolves itself into a question of interpretation in practical skill of the methods set out.

The candidate is required to bring to the practical examination his original laboratory note-books for inspection.

Pharmaceutical chemistry as a written paper is of three hours' duration, in two parts of four questions; not more than three out of each part but only five in all must be attempted. Questions in pharmaceutical chemistry bear largely on the British Pharmacopoeia. In the past the criticism has usually been that candidates have kept to simple things within the printed word and overlooked principles involved. A new

Pharmacopoeia greatly extends this subject beyond the archaic B.P. of 1914, and candidates have before them in the ensuing session and the terminal examination for 1933 the need for broadening their understanding of pharmaceutical chemistry. Text-books in certain essential particulars will need rewriting and greatly extending, and the same applies to the mentality of the student. It means considerably more care and attention being given to the subject during the coming session, but the difficulties are not insurmountable.

#### FORENSIC PHARMACY

The Candidate will be required to possess such information concerning the following enactments as is contained in the pamphlet, "Forensic Pharmacy," published by the Pharmaceutical Press:—The Pharmacy Acts, the Arsenic Act, the National Health Insurance Act, the Dangerous Drugs Acts and Regulations, Apothecaries Act, Medicine Stamp Act, Shops Act (sections dealing with the sale of medicines), Weights and Measures Act, Protection of Animals Act, Sale of Food and Drugs Acts, Registration of Business Names Acts, Venereal Disease Act, and the relevant sections of the Acts relating to the sale of spirits (including wines), storage and sale of explosives or inflammable substances, sale of abortifacients.

Forensic pharmacy shows quite a large number of rejections, not in poisons law only, but in "shop" law, too, though this is kept to simple facts, so that there should be no difficulty in dealing with the subject. It is true that questions arising on interpretation are permissible, and for this the official handbook is not quite so good a guide as the C. & D. Poisons Cards devised for easy reference on doubtful points for the practising pharmacist. The C. & D. Poisons Cards, Nos. 1 and 2, summarise the Acts, together with an extended list of several thousand poisons. The Dangerous Drugs Card, No. 4, is the best epitome of the Acts and Regulations, giving the practical points. In addition, the whole of the laws specified in the syllabus as affecting pharmacy are

#### Syllabus for Chemist & Druggist Examinations

(IN BRIEF)

##### Preliminary Scientific

###### BOTANY

Morphology, including Anatomical Structure; Physiology, Reproduction; Physical Effects of Light and Gravity, classification, dissection and description of plants within specified classes.

###### CHEMISTRY

Chemical Principles; Non-Metals and their Compounds; Characters and Classification of Metals; Formation of Oxides and Salts; Carbon and its Oxides; Knowledge of Estimation of Carbon; Hydrogen, Nitrogen; Simple Chemical Problems.

###### PRACTICAL CHEMISTRY

Analysis of a salt containing not more than two Metals and two Acid Radicals; Identification and Knowledge of specified metals and salts; Principles of Volumetric Analysis and standardisation of solutions.

###### PHYSICS

Conservation of Energy; Gravitation, Balance, Pressures; Diffusion, Vapour Densities; Thermometer, Barometer; Specific Gravity, Mass, Force, Energy, Work; Forms of Matter; Temperature and Pressures; Light: Reflection and Refraction; Correction of Vision; Magnets: Static and Current Electricity; Primary and Secondary Cells.

##### Qualifying

###### PHARMACOGNOSY

Pharmacopoeial Drugs and others specified; Recognition, Classification; Sources, Structure, Chemical and Physical Characteristics; Active Principles.

###### PHARMACY

Laboratory Methods and Appliances; Preparation and Production of Galenicals; Knowledge of Assay; Sterilisation; Dispensing and Prescription Reading and Translation.

###### PHARMACEUTICAL CHEMISTRY

Preparation and properties of specified medicinal organic compounds. Pharmacopoeial test for impurities, assay, and volumetric determinations.

###### FORENSIC PHARMACY

Knowledge of Schedules, Conditions and Precautions of Sale of Poisons, and Laws Affecting the Keeping of Open Shop.

relating to the use of stills, methylated spirit, medicated wine, storage and sale of explosives or inflammable substances, sale of abortifacients.

Forensic pharmacy shows quite a large number of rejections, not in poisons law only, but in "shop" law, too, though this is kept to simple facts, so that there should be no difficulty in dealing with the subject. It is true that questions arising on interpretation are permissible, and for this the official handbook is not quite so good a guide as the C. & D. Poisons Cards devised for easy reference on doubtful points for the practising pharmacist. The C. & D. Poisons Cards, Nos. 1 and 2, summarise the Acts, together with an extended list of several thousand poisons. The Dangerous Drugs Card, No. 4, is the best epitome of the Acts and Regulations, giving the practical points. In addition, the whole of the laws specified in the syllabus as affecting pharmacy are



# Educational Information

analysed and special points given in the *C. & D. Diary*, 1932. No candidate need fear a written examination of three hours if he has digested the forensic exposition in the *C. & D. Diary*, 1929. Three hours for six questions on this subject as set out in recent papers seems almost farcical, as a well-trained candidate who has applied the hints set out above could answer the questions in half the time. The examination is largely a test of memory and application of common sense in dealing with tricky or seeming variations in the selling or dispensing of poisons.

### Summary of Examination Fees

Apart from the fee for collegiate courses, the following are payable by pharmacy students:—

Registration as student, £2 2s.

Preliminary Scientific, £6 6s.

Re-examination in case of failure, £4 4s.; a person who has failed to attend, £2 2s.

Chemist and Druggist Qualifying examination, £12 12s.

Re-examination in case of failure, £6 6s.; a person who has failed to attend, £3 3s.

Those about to enter the calling should be informed as to the conditions for a chemist and druggist qualification, and under competent advice, parents and guardians should weigh carefully the advantages and disadvantages of the method of procedure. The conditions of the chemist and druggist qualification are dealt with under the appropriate heading. Two ways are possible for the pharmaceutical chemist qualification, one through the examinations of the Pharmaceutical Society and the other through the University of London or any other University which may later be recognised. The University training and examinations include both internal and external students.

In the case of the pharmaceutical chemist there is a change in the times of the examination, January and July being substituted for April and July. The entrance examinations are the same for those of the chemist and druggist qualification, and the same applies to the Preliminary Scientific. At this point a decision must be made for the passing from that of a chemist and druggist to a pharmaceutical chemist qualification if it comes as an afterthought. A candidate must be twenty-one years of age and supply the usual proofs. The hours in an open shop or recognised institution are 2,000. The hours for studying at college are 1,600, made up by 620 in pharmacy, 270 in pharmacognosy, 440 in chemistry, and 270 in botany. The examination is in botany, chemistry, pharmacognosy, pharmacy (including the translation and dispensing of Latin prescriptions) and forensic pharmacy. The conditions of failure are the same as in the other examination, with this addition: If the standard required for the pharmaceutical chemist qualification is not reached, but the work done, in the opinion of the board of examiners, reaches the chemist and druggist standard, a certificate for that qualification may be awarded. A chemist and druggist who desires to go further will be entitled to enter for the pharmaceutical chemist qualification on an additional curriculum of 1,060 hours, including 240 in pharmacy, 110 in pharmacognosy, 420 in chemistry, and 290 in botany; but he will be excused the examination relating to translation and dispensing of prescriptions and forensic pharmacy. Articles of pupilage apply equally to students for the pharmaceutical qualification, the hours being 2,000. The syllabus is as follows:—

### APPENDIX 5

#### SYLLABUS FOR THE PHARMACEUTICAL CHEMIST QUALIFYING EXAMINATION

*Although the study of French and German is not included in the systematic course of instruction required by Regulation 25 (b) of the Regulations for the Pharmaceutical Chemist Qualifying Examination, questions will be set*

*involving (1) the translation of passages in French and in German, and (2) answers with regard to the subject matter thereof.\**

### BOTANY

consists of two Papers and a Practical Examination. (1) The principles of morphology: the special morphology of medicinal plants. (2) Anatomy and histology: the systematic anatomy of medicinal plants; microchemistry. (3) The distinguishing characters of the chief taxonomic divisions of plants, including the following groups and families, particular attention being directed to such plants as are of pharmacognostical importance:—

#### THALLOPHYTA.

*Algæ:* Cyanophyceæ, Chlorophyceæ, Diatomaccæ, Phæophyceæ, Rhodophyceæ.

*Fungi:* Phycomycetes, Ascomycetes, Basidiomycetes, Lichenes, Bacteria.

#### PERIOPHYTA.

*Lycopodiina:*—Lycopodiaceæ.

*Filicina:*—Polypodiaceæ.

*Equisetina.*

#### SPERMOPHYTA.

*Gymnospermae:* Coniferae.

*Angiospermae.*

*Monocotyledones:*—Graminaceæ, Aracceæ, Liliaceæ,

Amaryllidaceæ, Iridaceæ.

*Dicotyledones*—Salicaceæ, Fagaceæ, Ulmaceæ, Cannabaceæ (= Cannaboidæ), Polygonaceæ, Ranunculaceæ, Papaveraceæ, Cruciferæ, Rosaceæ, Leguminosæ, Rutaceæ, Euphorbiaceæ, Malvaceæ, Myrtaceæ, Umbelliferae, Ericaceæ, Gentianaceæ, Boraginaceæ, Labiatæ, Solanaceæ, Scrophulariaceæ, Rubiaceæ, Caprifoliaceæ, Valerianaceæ, Campanulaceæ, Compositeæ.

(4) The general Principles of Plant Physiology with special reference to the processes of metabolism.

### Practical Examination

To (1) examine, describe, dissect and make preparations, both macroscopic and microscopic, of plants or parts of plants include in the foregoing schedule; (2) refer to their appropriate systematic position plants or parts of plants comprised in the foregoing schedule; (3) identify British angiosperms by means of a flora; show a practical knowledge of the methods and apparatus used for demonstrating the main facts of the physiology of plants.

### CHEMISTRY

consists of two Papers and a Practical Examination.

To have a general acquaintance with the five main divisions of the subject, viz.:—

(1) General Theoretical Chemistry; (2) Inorganic Chemistry; (3) Organic Chemistry; (4) Physical Chemistry; (5) History of Chemistry since the time of Boyle.

The candidate will be allowed to bring into the examination laboratory any one book on quantitative analysis provided that it does not contain any reference to qualitative analysis.

### PHARMACOGNOSY

consists of two Papers and a Practical Examination.

To possess a general knowledge of the crude drugs of vegetable or animal origin described in the British Pharmacopœia, of their more important constituents and of their chief commercial varieties; to be acquainted with the methods commonly adopted in the microscopical examination of vegetable drugs, including the isolation and identification of the various tissues and cells; measurement; microchemical tests; and the means of examining fabrics used for surgical dressings.

### Practical Examination

The candidate will be required to identify any crude drug of vegetable or animal origin described in the British Pharmacopœia; to demonstrate diagnostic characters ascertainable by means of a lens, or by dissections; to make sketch and describe microscopical preparations of any organised vegetable drug contained in the British Pharmacopœia, either in the entire or powdered state; to point out

\* Candidates are recommended to read some books or papers in French and in German on the subjects of the examination. In all subjects the candidate is required to bring the original laboratory books signed by the teacher, which may show any original work done.



## Educational Information

distinctive histological characters in the same; to identify in the form of powder such as are commonly used in that condition, and to ascertain their freedom from admixture by comparison with authentic material.

### PHARMACY

To show a general knowledge of the following, and a practical acquaintance with pharmaceutical apparatus and operations:—

Solution and the conditions affecting it; methods of determining solubility, the preparation of isotonic, colloidal and other solutions. Filtration, colation, clarification and decolorisation. Preparations of crystals and granules. Dialysis. Apparatus used and principles involved in the drying, disintegrating, powdering and sifting of crude drugs and in the processes of evaporation, distillation, sublimation, calcination and fusion; the application of these processes in pharmacy. Expression; recovery of residual liquids from tincture mares. The principles of sterilisation; sterilisation of apparatus and materials. Preparation of aseptic and antiseptic dressings; determination of the proportion of wool and cotton in dressings made from the mixed fibres. Enzymes and their action in the manufacture and preservation of pharmaceutical preparations. An elementary knowledge of vaccines and serums and the methods by which they are prepared and standardised.

To possess a general knowledge of the chemistry of the organic and inorganic substances or compounds of the British Pharmacopoeia, and also a general knowledge of the manufacture of the preparations of the British Pharmacopoeia.

### Practical Examination

To conduct the operations by which the preparations of the British Pharmacopoeia are made; to dispense prescriptions, and to have a general knowledge of dosology.

Qualitative and quantitative analysis with special reference to the tests and assay processes of the British Pharmacopoeia by which the purity of chemical drugs is ascertained and by which the principal constituents of vegetable drugs and their preparations are determined.

### FORENSIC PHARMACY

This is the same as set forth in the Chemist and Druggist qualifying examination.

## University Examinations in Pharmacy

### LONDON

In order to be admitted to a degree of B.Pharm., London, either as an internal or external student, candidates must (1) matriculate in one of the ways provided by the regulations, (2) pass the Intermediate examination in science, (3) have followed an approved course of study under recognised teachers of the University and in approved institutions. The fee for each examination is £6 6s. Application for copies of the regulations should be made to the Academic Registrar, University of London, South Kensington, S.W.7, or for an external student to the External Registrar.

The Intermediate examination of the University for external and internal students is set in two papers and a "practical" in each subject. Chemistry includes methods which lead to the discovery of the composition of common natural materials; determination of molecular weights, chemical laws and processes. In the practical: Quantitative, gravimetric, and volumetric work. Notebooks must be available for inspection by the examiners.

In Physics: The properties of solids, liquids and gases; principles of heat, sound and light, and the properties of magnetism and electricity.

Botany: Characteristics of angiosperms, gymnosperms, and specified natural orders. Pteridophyta, bryophyta, algae and fungi, together with elementary physiology. In the practical will be included dissection and examination of parts of plants.

Zoology: The fundamental facts and laws, including specified types. General organisation of types, biological

laws, structural phenomena, reproduction and diagnostic characteristics of lower forms of life. In the practical: Parts of the animals selected will require description, and some dissection is expected.

Biology: This is an alternative subject to zoology. It includes the differences between living and non-living matter; cells, integration, differentiation and division of labour. Enzyme action, transformation of energy in living matter; nutrition, stimulus, response, movement, chemical co-ordination and general mechanisms. Reproduction; embryo and heredity. In the practical: Appropriate physiological experiments, dissection, microscopy and elementary embryology.

The B.Pharm. degree Final examination is the same for external as for internal students, covering botany, chemistry, pharmacognosy, and pharmacy, and is set out in the syllabus for the Pharmaceutical Chemist qualification, *minus* forensic pharmacy. The degree cannot be taken until three years after matriculation.

A degree granted by the University does not entitle to registration by the Pharmaceutical Society, but regulation 29 provides that any registered apprentice or student who has served the period of practical training and produces to the registrar a notification of having passed the Final examination for the degree of bachelor of pharmacy of the University of London, or a corresponding degree of any other University approved by the Pharmaceutical Society's Council, shall be deemed to have passed the Pharmaceutical Chemist Qualifying examination in the subjects set out on the final certificate, and shall be entitled to enter the examination of the Society in forensic pharmacy and, on passing, be entitled to registration.

### MANCHESTER

Science degrees in pharmacy are conferred by the universities of Glasgow and Manchester. In Manchester, for the B.Sc. (Pharm.) degree, candidates must first pass the University Matriculation examination or its equivalent. They should then attend courses in chemistry, physics, botany and pharmacy, and present themselves for the Intermediate examination in the first three subjects at the end of the first year. Such candidates before proceeding to the Final examination, must present certificates of having attended (1) during the second year courses in chemistry (advanced), botany (advanced), and pharmaceutics; (2) during the third year further approved courses in chemistry or botany, and in pharmaceutics (advanced); and (3) must present satisfactory evidence that they can read scientific literature in either French or German, or in any other language approved by the Faculty. They should present for the Final examination (i) chemistry or botany, (ii) pharmaceutics. The cost of a degree course varies with the subjects chosen and with the nature of the degree, but the average fees for an ordinary B.Sc. degree course amount to £42 a session. Full particulars may be obtained from the Pharmaceutical Department, University of Manchester.

### GLASGOW

In Glasgow, candidates must first pass the Preliminary examination. In not less than three academic years they must attend courses of instruction at the University or the Royal Technical College, and must have been "practically engaged in the operations of pharmacy." The regulations may be obtained from Jackson, Wylie & Co., 73 West George Street, Glasgow.

### BELFAST

The Queen's University confers the degree of B.Sc. in Pharmaceutics. Some interchange of exemption of study between the University and the Pharmaceutical Society of Northern Ireland, at various stages in the respective courses of study, is under consideration. Students desiring further information should apply to the Registrar of the University.

## Educational Information

### Teaching Institutions

Schools and institutions are recognised by the Pharmaceutical Society in most parts of Great Britain, some for the Preliminary Scientific examination, and some for the Chemist and Druggist Qualifying and the Pharmaceutical Chemist Qualifying examinations. The following are the principal schools and institutions in question:—

#### ENGLAND AND WALES

##### LONDON

###### The School of Pharmacy

17 Bloomsbury Square, W.C.1

Dean of School: Prof. H. G. Greenish, D. ès Sc. A course for the Chemist and Druggist Qualifying examination commences October 1932, ending June, 1933. Fee, £42 13s. The first and second year of a two-years' course in pharmacognosy and pharmacy for the Pharmaceutical Chemist Qualifying examination and for the degree of B.Pharm. of the University of London commence October 1932, ending June 1933. These courses have been arranged with University College, and an inter-collegiate time-table drawn up enabling botany and (in part) chemistry to be taken at University College and the other subjects at the Society's School. Fee for each year of the course, £44 15s. No course for Preliminary Scientific. Fees include full subscription to the Students' Association and to the University of London Union.

###### Chelsea Polytechnic School of Pharmacy

Manresa Road, Chelsea, S.W.3

Principal: F. J. Harlow, M.B.E., Ph.D., B.Sc. Pharmaceutics: C. Morton, B.Sc., Ph.C., Head; F. R. Bateson, B.Pharm., Ph.C., T. C. Denston, Ph.C., J. E. Woodhead, B.Sc., Ph.C., F.I.C. Chemistry: C. Dorée, M.A., D.Sc., Head; J. C. Crocker, M.A., D.Sc., F.I.C., F. H. Lowe, M.Sc., J. H. Skellon, M.Sc., A. Hebdon, B.Sc. Biology: H. B. Lacey, F.L.S., Head; C. A. Ealand, M.A., W. B. Turrill, D.Sc., C. J. A. Berkeley, B.Sc., W. H. Leigh-Sharpe, M.Sc., Miss M. E. Millner, M.Sc. Physics: L. Lownds, Ph.D., B.Sc., F.Inst.P., Head; W. B. Medlam, B.Sc., W. Mandell, Ph.D., M.Sc., L. J. Freeman, Ph.D., A.R.C.Sc., D.I.C. The School of Pharmacy includes laboratories for practical pharmacognosy, pharmaceutical research, practical pharmacy, pharmaceutical chemistry and large scale galenical manufacture, in addition to a lecture theatre accommodating 100 students. Day and evening courses in preparation for the Preliminary Scientific, Chemist and Druggist, Pharmaceutical Chemist and B.Pharm. examinations commence on Wednesday, September 21, 1932. An evening course for the Chemist and Druggist Qualifying examination has been arranged with the approval of the Pharmaceutical Society. An evening course in biochemical analysis, based on the syllabus of the proposed diploma in biochemical analysis, will commence on October 14. A leaflet describing the course, which will be conducted by Dr. H. E. Archer, may be obtained. Fees: Day courses, £21 per session; evening courses, £1 13s. per session (three terms). Prospectus from the Principal.

###### Gordon Hall School of Pharmacy for Women

Drayton House, Gordon Street, W.C.1

Principals: Miss E. S. Hooper, B.Sc., F.I.C., Ph.C., and Miss K. M. King, Ph.C. Courses of training for the examinations of the Pharmaceutical Society and Society of Apothecaries. Hours of instruction, 10—4.30 p.m. Fees, 25 guineas per session. Particulars from Principals. Telephone: Museum 3930.

###### London College of Pharmacy

361 Clapham Road, S.W.9

Staff: Irvine G. Rankin, B.Sc., Ph.C. (Principal), V. P. A. Gelli, B.Sc., P. M. Sully, B.Pharm., Ph.C.,

J. E. Baldock, M.P.S. Nine, six and three months', also part-time, courses for the Preliminary Scientific and Chemist and Druggist Qualifying examinations. Fee, £10 10s. per term. Evening classes: Tuesday, Wednesday and Thursday. Course of preparatory study can be taken by apprentices and juniors before entering College. Large botanical garden.

###### Norwood Technical Institute

Knight's Hill, West Norwood, S.E.27

Principal: L. N. Coombs, B.Sc. Day and evening Classes for Preliminary Scientific examination. Staff: Chemistry and Physics, W. Gerrard, M.Sc. Botany, Ethel R. Spratt, D.Sc. Session opens September 19. London fee, from £1 for part-time course.

###### The South of England College of Pharmacy

186 Clapham Road, S.W.9

Principal: H. Lucas, Ph.C., F.C.S., assisted by a qualified staff of teachers. A six-months' course for Part I. Fee, 20 guineas, and a nine-months' course for Part II, fee 30 guineas; commence on October 6. The courses are independent and hours of instruction are 9.30 a.m.—5 p.m. daily. Revision courses for both parts are obtainable, fee 10 guineas per term. A "cne-a-week" class for Part I begins on October 12, and will be held each Wednesday, 2-9 p.m. (junior and senior classes). Fees from 1 guinea per term.

###### Wandsworth Technical Institute

High Street, Wandsworth, S.W.18

Day and evening classes in chemistry, physics and botany for Qualifying examination of Pharmaceutical Society. Sessional fee, 30s. (over twenty-one years of age); 15s. (under twenty-one).

###### West Ham Municipal College

Principal: T. C. Baillie, M.A., D.Sc., Head of Chemistry Department: G. Dean, M.A., D.Sc. Pharmacy and Materia Medica: W. A. Knight, Ph.C. Evening course in pharmacy, materia medica and chemistry, commencing September 26. Fees, 14s. to 28s. per session.

###### Westminster College of Pharmacy

190 Clapham Road, London, S.W.9

Founder: the late G. S. V. Wills. Principal: P. H. Woodroffe, Ph.C., F.C.S., assisted by J. G. Everett, Ph.C., and staff. Tuition for Preliminary Scientific and Qualifying examinations. Revision course of six weeks commences on August 8. Fee £6 6s. The 1932-33 session commences on October 5 and arrangements are made for revision and six and nine months' courses for the Preliminary Scientific and Chemist and Druggist Qualifying examinations respectively. Part-time classes for Preliminary Scientific examination are held and preliminary correspondence courses.

###### Wimbledon Technical College

Gladstone Road, S.W.19

Lecturers: F. C. Ray, M.A., Ph.D., A.I.C., C. T. Archer, M.Sc., D.I.C., J. J. Hedges, Ph.D., B.Sc., T. C. Thrupp, M.Sc., D.I.C., R. P. Linstead, D.Sc., Ph.D. Classes for Preliminary Scientific examination. Session commences September 26, 1932.

###### Woolwich Polytechnic

Woolwich, S.E.18

Principal: E. Mallett, D.Sc., M.I.E.E., A.M.Inst.C.E., F.P.S. Head of Chemistry Department: A. I. Vogel, D.Sc., D.I.C., F.I.C. Lecturer: J. G. Kettlewell, M.Sc. Head of Physics Department: T. B. Vinycomb, M.C., M.A. Lecturers: J. Poole, B.Sc., C. Dixon, B.Sc. Afternoon and evening classes. Fees: First afternoon or evening, 20s.; any additional, 10s., per session. Recognised for chemistry, physics and botany in Preliminary Scientific examination.

# Educational Information

## PROVINCES

### Aberystwyth University College of Wales

Principal: H. Stuart Jones, M.A., D.Litt., F.B.A. Courses in chemistry and botany adapted to the requirements of candidates for examinations of the Pharmaceutical Society. Prospectus from the Secretary.

### Barnsley Technical College

Principal: D. Paton Grubb, B.Sc. (Edin.) Chemistry Department: W. W. Reeve, B.Sc. (Lond.), F.I.C.; W. W. Close, B.Sc. (Vict.), A.I.C.; E. Lyon, B.Sc. (Manc.); W. G. White, B.Sc. (Lond.), A.M.I.E.E.; J. W. Marshall, B.Sc. (Vict.); J. D. Parkin, B.A., M.Sc. (Cantab.). Session from September 19, 1932, to July 8, 1933. Affiliated to the University of Sheffield. Recognised for the Preliminary Scientific examination. Part-time course for apprentices in the district one whole day a week. Fee £2 2s. the session. Evening instruction in chemistry and physics, and in botany on one afternoon a week.

### Barrow-in-Furness Technical College

Lecturers.—Chemistry: T. Hopkins, Ph.D., F.I.C. Physics: G. Cole, B.Sc. Botany: Miss L. Gilham, B.Sc. Evening classes in chemistry, September to April. Fees: 7s. 6d. to 10s. Day and evening courses for apprentices, September to July. Fees: Course, including chemistry, physics and botany, £3 3s.

### Birmingham (Aston) Technical College

Principal: Raymond R. Butler, M.Sc., F.I.C., F.C.S. Chemistry Lecturer: J. C. Hutton, B.Sc. Physics: W. B. Wynn, B.Sc. Fees: Part-time day, £1 to £1 10s. per session. Evening classes, 10s. 6d. Recognised for botany, chemistry and physics.

### Birmingham Central Technical College

Principal: D. S. Anderson, Ph.D., B.Sc., M.I.Mech.E., M.I.A.E. Head of Department of Pharmacy: H. Berry, B.Sc., Ph.C., A.I.C. Courses for the following examinations commence on September 26:—Preliminary Scientific, Chemist and Druggist Qualifying, Pharmaceutical Chemist Qualifying, Intermediate B.Pharm. (London), Final B.Pharm. (London).

### Birmingham (Handsworth) Technical College

Principal: W. E. Harrison, B.Sc. Physics: M. B. Falla, B.Sc., E. A. Lees, A.R.C.S.; H. J. Roper, B.Sc.; A. P. Jones, M.Sc. Chemistry: J. S. Jennings, B.Sc., W. H. Hardaker, M.Sc., B.Sc.; L. G. Beresford, B.Sc. Botany: W. H. Hardaker, M.Sc., B.Sc. Recognised for Preliminary Scientific examination. Special courses for apprentices, also for Professional Preliminary examinations. Fees: Evening—Chemistry, physics and botany, 11s. 6d. per session. Day—One half-day per week, £1 1s. per session; two half-days, £1 11s. per session; additional half-days, £1 per session. Students under eighteen years of age, reduced fee of £1 1s. per session for two half-days per week (additional half-days as above).

### Bolton Municipal Technical College

Head of Chemical Department: T. M. Nightingale, B.Sc. Chemistry: F. Smith, B.Sc., R. Barlow, B.Sc., F. Slater, B.Sc., H. E. Buckley, D.Sc., C. W. Wood, M.Sc. Physics: J. W. Grime, B.Sc., J. Stafford, B.Sc. Botany: Mrs. M. S. Burgess, B.Sc. Recognised for Preliminary Scientific examination. Course fees: 5s. to £2 2s. Non-course fees: One or two evenings per week, from 7s. 6d. to 15s.

### Bournemouth Municipal College

Principal: C. E. Walker, M.A., B.Sc. Lecturers.—Chemistry: E. A. Seeley, Ph.D., A.I.C., Miss H. V. Davies, B.Sc. Botany: Miss H. V. Davies, B.Sc.; Miss G. A. Beer, B.Sc. Physics: R. M. Clark, B.Sc., A.M.I.E.E.; G. H. Hamilton, B.A., B.Sc.; T. T. Smith,

B.Sc. Recognised for Preliminary Scientific examination. Day classes, fee, £6 6s. per term; reduced fees for part time. Evening classes.

### Bradford Technical College

Principal: H. Richardson, M.Sc. Head of Department of Pharmacy: F. N. Appleyard, B.Sc. (London), F.I.C., Ph.C. Assistant Lecturers in Pharmacetics: D. W. Shaw, B.Sc. (Birmingham), Ph.C.; H. N. Dale, B.Pharm., Ph.C., and J. W. Cooper, Ph.C. The College courses are recognised by the Pharmaceutical Society for the purpose of training students for the Preliminary Scientific, Chemist and Druggist Qualifying, and Pharmaceutical Chemist Qualifying examinations, and by the University of London for the training of candidates for the degree of bachelor of pharmacy. A course is also provided for the Assistants' examination of the Society of Apothecaries. The new accommodation includes laboratories for pharmaceutical chemistry and pharmacognosy and a *materia medica* museum. Registration commences on September 20.

### Brighton Technical College

Full-time courses for (a) the Preliminary Scientific, (b) the Chemist and Druggist Qualifying, (c) the Pharmaceutical Chemist Qualifying and Bachelor of Pharmacy. Classes are held under the guidance of Mr. H. B. Mackie, Ph.C., B.Pharm., Head of the School of Pharmacy, assisted by Mr. E. R. Parken, B.Sc., Ph.C.; Miss Mary E. Stevens, B.Pharm., Ph.C., silver medallist; and Mr. A. F. Caldwell, Ph.C., Pereira medallist, and the staffs of the Physics, Chemistry and Biology Departments. The fee for any day course for students residing in Brighton, either at home or in approved rooms during term time, is £24 for a session or £9 per term. The Pharmacy Department includes separate laboratories for dispensing, special testing, galenical pharmacy, and pharmacognosy, with suitable preparation rooms. An R. A. Cripps' exhibition of twenty guineas is open annually to apprentices and assistants to pharmacists in Sussex, Kent, Surrey and Hants, who are qualified to proceed to the Chemist and Druggist or Pharmaceutical Chemist courses. By arrangement with the local associations of pharmacists, a part-time course extending over three years enables apprentices to prepare for the Preliminary Scientific examination, but intending apprentices are urged strongly to complete this examination before starting actual apprenticeship. Applications for admission to the College should be made as early as possible to the Principal.

### Bristol Merchant Venturers' Technical College

Principal: Andrew Robertson, D.Sc.; Superintendent, W. A. Andrews, B.Sc., A.I.C. Head of Pharmacy Department: D. J. Williams, B.Sc., Ph.C. Lecturers in Pharmacetics: W. Cooper, Ph.C., G. H. Moore, Ph.C. Lecturer in Botany: Miss E. E. M. Beer, B.Sc. Head of the Chemistry Department, W. A. Andrews, B.Sc., A.I.C. Lecturers in Chemistry: T. Malkin, Ph.D., A. Marsden, F.I.C., E. J. Riggs, B.Sc., H. J. Willavoy, B.Sc., A.I.C. Head of Physics Department: Professor D. Robertson, D.Sc., M.I.E.E. Lecturers in Physics: W. E. Palmer, B.Sc., H. J. Willavoy, B.Sc., A.I.C.

### Cardiff Technical College

Principal: Charles Coles, B.Sc. Head of Pharmacy Department: R. Vernon Lloyd, B.Pharm., Ph.C. Lecturers in Pharmacetics: J. M. Davies, Ph.C., L. L. Jones, Ph.C. Assistant Lecturer in Pharmacy: Wm. Sumner, Ph.C. Chemistry: H. B. Watson, D.Sc., F.I.C., E. A. Rudge, M.Sc., F.I.C., H. Aldred, M.Sc., P. H. Griffiths, B.Sc., J. F. J. Dippy, Ph.D. Pharmaceutical Chemistry: H. A. Perkin, Ph.C. Physics: W. S. Vernon, M.Sc., J. Webber, B.Sc., F.S.M.C. (Hons.), F.B.O.A. Botany: J. Mangan, M.A., F.R.C.Sc., Miss E. Melville, Ph.C. Nine-months' day course for Preliminary Scientific and Chemist and Druggist Qualifying examinations commence in October.



# Educational Information

Also two years' course for Pharmaceutical Chemist Qualifying examination, and three years' course for Degree in Pharmacy. Fee, £20. Apothecaries' Hall Assistants' examination, nine-months' course. Fee, £20. Pharmaceutical Chemist Qualifying examination. Fee: October to July, £20.

### Darlington Technical College

Principal: J. W. Angles, M.Sc., M.I.Mech.E. Chemistry: A. J. Bishop, B.Sc., L. Peacock, B.Sc., R. Sargent, and T. A. Tweddle. Evening pharmacy course. Fees: 15s. to 25s. Recognised for Preliminary Scientific examination.

### Derby Technical College

Principal: W. A. Richardson, B.A., D.Sc., B.Sc. (Eng.), A.M.I.Mech.E. Lecturers.—Chemistry: J. Yates, M.Sc., F.I.C., G. E. Pool, B.Sc., F.I.C., A. Walton, M.Sc., A.I.C. Physics: G. H. Broom, B.Sc., F. Record, B.Sc., W. D. Jones, B.Sc. Botany: W. B. Randles, B.Sc. Courses arranged in day and evening classes. Fees: Part-time day courses (one day per week and evening), £1 per session inclusive. Evening classes, 10s. per session. Recognised for Preliminary Scientific examination.

### Halifax Municipal Technical College

Principal: A. R. Boeree, M.A., B.Sc., F.I.C. Head of Chemistry Department: W. J. Stansfield, A.R.C.S., A.I.C., F.C.S. Assistants.—Chemistry: G. Sutcliffe, B.Sc., J. W. Turton, A.R.C.S., A.I.C. Botany: C. Fielding, Ph.C. Physics: A. R. Buttrey, B.Sc. Instruction (two sessions) for Preliminary Scientific examination. Fee, £1 1s. per session.

### Harrogate Technical School

Principal: W. E. C. Jalland, M.Sc. Chemistry: W. Wallis, Inter. B.Sc. Physics: T. H. Lusher, B.Sc., and F. R. Richardson, B.Sc. Botany: Rees Price, B.Sc. Recognised for Preliminary Scientific examination. Evening classes. Fees 12s. 6d. per session.

### Huddersfield Technical College

Principal: J. F. Hudson, M.A., B.Sc. Full time and part-time courses in subjects for Preliminary Scientific examination of the Pharmaceutical Society are held. Also part-time courses in bacteriology, pharmacy and *materia medica* and applied optics. Fee: full-time, £12 12s. a session; part-time course, £3 3s.

### Hull Municipal Technical College

Head of Chemistry Department: C. B. Marson, Ph.D., B.Sc., F.I.C., assisted by eight lecturers. Classes in inorganic and organic chemistry, physics, botany, *materia medica*, oil, paint and varnish manufacture. Courses in *materia medica* and dispensing for students who have already obtained Part I and wish to continue their studies before taking their final at the selected college.

### Kingston-upon-Thames Technical College

Head of Pharmacy Department: Mr. H. P. Starck, M.A. (Cantab.), Hon. Natural Science Tripos. Chemistry: elementary, inorganic, Mr. R. Atkin, M.A., B.Sc. (Oxon.); advanced, inorganic and organic, Mr. H. P. Starck, M.A. (Cantab.), C.T.D.; Physics, elementary, Mr. H. H. Hirst, M.Sc.; advanced, Mr. C. J. Rhodes, M.Sc., M.Ed., A.Inst.P.; Botany, elementary, Miss L. M. Cunningham, B.Sc.(Edin.); advanced, Miss L. M. Cunningham, B.Sc.(Edin.). This course prepares students for the examinations of the Pharmaceutical Society of Great Britain.

### Lancaster Storey Institute Technical College

Headmaster: F. H. Mould, B.Sc., A.R.C.S. Lecturers: S. Walton, B.Sc., P. Gillman, B.Sc., W. Knowles, B.Sc., J. Baty, B.Sc., E. L. Mills, B.Sc., H. Hempling, B.Sc., J. L. Harris, B.Sc., H. Lewty. Recognised by the Pharmaceutical Society for the Preliminary Scientific examination.

### Leamington Technical School

Lecturers. — Physics: F. W. Onslow, B.Sc.; Chemistry: A. W. Wellings, B.Sc.; Botany (to be appointed). Recognised for Part I of Qualifying examination. Physics Friday, chemistry Wednesday, botany Tuesday. Times of classes, 7.30 to 9.30 p.m. Fee, 10s. per class.

### Leeds College of Pharmacy

Principal: Arthur W. Lupton, Ph.C. Full-time courses for the Preliminary Scientific and Chemist and Druggist examinations commence on October 6. Also part-time evening classes for the Preliminary Scientific examination only, and a full-time course for the Apothecaries' Hall examination commence on the same date. A special revision course is now running for the September examinations.

### Leeds Technical College

Principal: J. H. Everett, B.Sc. Chemistry: R. Gawler, M.Sc., F.I.C., assisted by A. Taylor, M.Sc., A.I.C., H. E. Goodson, A.R.C.S., A.I.C., F. Crosland, B.Sc., H. J. Ewart, B.Sc., A.I.C., M. S. Fox, B.Sc., R. A. Hobley, B.Sc., J. H. Naylor, M.Sc., F.I.C., S. R. Stubbs, M.Sc., J. T. Thompson, M.Sc., F.I.C., G. O. Yorke, M.A. Physics: J. Crosfill, B.Sc. H. Teasdale, B.Sc., M.Ed., and L. Moore, M.Sc. Botany: Miss M. E. Malins, B.Sc., Rev. H. Parish, F.R.M.S. Day course in chemistry, physics and botany for the Preliminary Scientific examination. Day course in biology. Fee for full-time day course, £18 18s. per annum. Part-time day courses from £3 3s. per annum. Evening courses from 15s. to 30s. per session.

### Leicester College of Technology

Principal: L. W. Kershaw, B.Sc., A.M.Inst.C.E., F.G.S. Head of Pharmacy Department: A. R. G. Chamings, B.Pharm., Ph.C. Full-time courses for (a) all examinations of the Pharmaceutical Society, including the Pharmaceutical Chemist examination, and (b) B.Pharm. degree. Special attention is drawn to the nine months' course for the Ph.C. diploma or B.Pharm. degree for those students who have passed the Chemist and Druggist Qualifying examination, or have reached the Chemist and Druggist standard in their work. The College has very fully-equipped laboratories for all subjects and also possesses a well-stocked physic garden. Extra syllabus classes.

### Leicester, The Wyggeston Grammar School

Headmaster: T. Kingdom, M.A. Staff: Chemistry: Alwyn Pickles, M.Sc. (Lond.), H. Garside, B.A. (Oxon.). Physics: E. C. Cowell, B.Sc. (Lond.), D.I.C., J. R. Cottrill, B.A. (Cantab.). Botany: H. M. Lacey, M.A. (Cantab.). Recognised for Preliminary Scientific examination; three-term session from September to July. Fee, £18 18s. for the session.

### Liverpool Municipal Technical School

Principal: J. Scholes Hague, M.Sc. Chemistry: A. E. Findlay, B.Sc., F.I.C., F. J. Smith, B.Sc., Ph.D., A.I.C.; J. D. A. Johnson, B.Sc., Ph.D. (Lond.), and E. Jones, B.Sc., A.I.C. Physics: S. S. Richardson, D.Sc., and W. Creer, B.Sc. Botany: M. C. Pratt, B.Sc. Fees (three afternoon or evening classes weekly): £1 to £2 as to course. For the new session 1932-33 is the addition of part-time Preliminary Science courses for one full day per week on Wednesdays and Thursdays. A two years' course is arranged for Part I examinations.

### Liverpool School of Pharmacy

Principal: H. Humphreys Jones, F.I.C., Ph.C., F.C.S., assisted by J. Butler, B.Sc., F.I.C., Ph.C., W. E. Coates, B.Sc., A.I.C., M.P.S., Philip H. Jones, F.I.C., R. A. Williams, Ph.C., M.P.S., W. G. Cotton, M.P.S., S. D. Littlewood, M.P.S. Six and nine months'

## Educational Information

courses for the Preliminary Scientific and Qualifying examination respectively will commence on October 5. Revision courses for both parts will be arranged for August, October, January and April. Part time classes for Part I only will commence on October 5. The prescribed number of hours can be covered in two whole sessions, i.e., from October to June in successive years.

### Manchester College of Technology

Principal: B. Mouat Jones, D.S.O., M.A. Lecturers: O. R. Howell, B.Sc., Ph.D., D.Sc., F.I.C., R. J. Hughes, B.Sc., H. N. Mercer, M.A., Ph.D., D.I.C., H. P. Walmsley, D.Sc., F.Inst.P., W. Anderson, B.Sc., Miss J. Duncan, B.Sc., Ph.C., W. O. Howarth, M.Sc. Complete course for Preliminary Scientific Qualifying examination given jointly with Botanical Department of University. A part-time (day) course extends over two years, and is also intended to prepare students for the Manchester, Fairchild and Leverhulme Scholarship competitions held in June.

### Manchester University

Lecturers in Pharmaceutics: James Grier, M.Sc., Ph.C., H. Brindle, B.Sc., F.I.C., Ph.C., Miss Ivy Roberts, M.Sc., Ph.C., Miss J. Duncan, B.Sc., Ph.C., assisted by W. L. Fowlds, B.Sc. Courses for Preliminary Scientific, Chemist and Druggist and Pharmaceutical Chemist Qualifying examinations in Pharmaceutical Department commence in October; composition-fees from £23 2s. to £31 10s. Part-time (afternoon and evening) courses, extending over two years, have also been arranged for Preliminary Scientific examination at College of Technology. Degree courses in pharmacy are available.

### Armstrong College, Newcastle-upon-Tyne, University of Durham

Pharmacy students admitted to classes in chemistry, physics and botany. Fees, £25-£30 per annum, according to the classes taken, registration fee, subscription to students' societies and university union, amounting to £5 13s. 6d. per annum.

### Norwich Municipal Technical College

Principal: Howard A. Costigan, Ph.D., B.Sc., F.C.S., A.I.C. Chemistry: W. W. Reed, M.Sc. Physics: A. G. Coe, B.Sc., A. V. Lishman, B.Sc. Botany: J. E. Kimberley, M.Sc. Biology: H. J. Howard, F.L.S. Recognised for Preliminary Scientific examination. Combined day and evening courses. Session opens September 19. Fees: £1 to £1 10s. per session.

### Nottingham University College

Head of School of Pharmacy: A. O. Bentley, Ph.C. Lecturers: G. E. Trease, Ph.C., H. A. Turner, Ph.C., J. E. Driver, M.Sc., Ph.D., A.I.C., B. D. Shaw, B.Sc., Ph.D. Full-time day course for Chemist and Druggist examination. Fee £30. Two-year course for B.Pharm. and Ph.C. examinations. Fee £31 10s. per session. Three days per week course for Preliminary Scientific examination. Fee, £15 per session.

### Oxford City Technical School

Department of Pure Science, Chemistry and Physics: J. S. Hill, M.C., M.A., B.Sc. Botany: H. Baker, M.A. Recognised for the Preliminary Scientific examination. Evening courses in chemistry, physics and botany, extending over three years. Inclusive fee per year 20s.

### Plymouth and Devonport Technical College

Principal: W. S. Templeton, M.A., B.Sc., F.Inst.P. Physics: The Principal, F. C. Marks, B.Sc., G. H. Lock. Chemistry: F. A. Royle, M.Sc., Ph.D., F.I.C., F.C.S., T. Thorne Barnes, B.Sc. Materia Medica and Pharmacy: A. H. Ware, Ph.C., V. Smith, M.Sc., A.I.C., Ph.C. Botany: Miss F. A. Stanbury, M.Sc., Miss F. E. Smith, B.Sc. Part-time courses for Preliminary Scientific examination held three afternoons

or evenings each week. Fee: £3 3s. per session. Full-day courses for registered students. Fees: £15 to £20.

### Portsmouth Municipal College

Principal: Leonard B. Benny, M.A. (Cantab.), B.A. (Lond.). Vice-Principal: W. H. Watson, M.Sc., A.R.C.S. F.C.S. Head of Pharmacy Department: F. Hemming, Ph.C., M.P.S., F.C.S. Lecturers—Pharmacy, N. Francis, Ph.C., M.P.S., Miss M. Wells, Ph.C., M.P.S. (Sera and Vaccines), J. A. D. Radcliffe, M.B., Ch.B. Chemistry: G. M. Painter (M.C.), B.Sc., A.I.C., W. F. Andrews, M.Sc. Botany: Miss C. M. Gibson, B.Sc., Miss G. F. Selwood, B.Sc., Miss F. L. Beanland, M.Sc. Physics: A. T. Guinevan, B.Sc., J. Daley, B.Sc., A.R.C.S., D.I.C. Chemistry Demonstrator: N. St. Clair Jerome, B.Sc., B.Pharm. The College is an approved institution under the regulations of the Pharmaceutical Society and the London University. All classes commence on Monday, September 12, 1932. Fees, full-time courses, £15 15s. for Portsmouth residents, £21 for others, per session.

### Preston, Harris Institute

Affiliated to Universities of Manchester and Liverpool. Tuition in chemistry, physics and botany. Session begins in September. Fees, £9 10s. per session of three subjects, or £3 3s. 4d. per term. One subject, £3 10s. per session; two, £7. Recognised for Qualifying examination Part I.

### Salford Royal Technical College

Principal: Bertram Prentice, D.Sc., Ph.D. Recognised for Preliminary Scientific examination. Day courses and evening classes for pharmaceutical students in chemistry, botany and physics. Day-course fee: £3 3s. per term. Evening: 15s. to £1 5s.

### Sheffield Central Commercial College

Principal: W. B. Marshman. Staff.—Chemistry: Percy Lord, B.Sc. Ellis Jackson, B.Sc., G. R. Davies, B.Sc. Physics: S. Northeast, B.Sc., J. Hiles, M.Sc., E. Ridler, M.Sc. Botany: A. Burgess, B.Sc. Recognised for Preliminary Scientific examination. Evening classes. Fee for complete course, £1 1s.

### Southampton University College

Professor of Chemistry: D. R. Boyd, D.Sc., Ph.D., F.I.C. Special facilities in chemistry department for pharmaceutical students. Tuition fees and further particulars of the courses from the Registrar.

### Sunderland Technical College

Principal: E. R. Verity, B.Sc., A.R.C.Sc. Head of Pharmacy Department: Miss H. C. M. Winch, Ph.C., A.I.C., assisted by lecturers in each subject. Head of Chemistry Department: To be appointed. Recognised for Preliminary Scientific, Chemist and Druggist and Pharmaceutical Chemist Qualifying examinations. Recognised by the University of London for B.Pharm. Degree.

### Swansea Municipal Technical College

Staff:—Chemistry: E. A. Tyler, M.A., F.I.C. Physics: J. C. Kirkman, B.Sc., F.P.S. Botany: P. S. Jewell, M.A., A.I.C. Courses: Preparatory part-time day and evening (sessional fee, £1 10s.). Full-time nine months' course for Preliminary Scientific examination (sessional fee, £15 15s.). Session opens September 27.

### Wigan and District Mining and Technical College

Principal: J. F. S. Ross, M.C., B.Sc., Ph.D. Head of Chemistry Department: E. B. Naylor, M.Sc., F.I.C. Lecturers: H. Crofts, M.Sc.; A. Cooksey, B.Sc., A.I.C. Lecturer in botany and zoology: N. M. Blaikley, M.Sc. Full-time pharmaceutical course (fee, £10s. 10s.); part-time course (£1 1s.). Recognised for Preliminary Scientific examination.



### Wolverhampton and Staffordshire Technical College

Head of Chemistry Department: W. Regan, B.Sc. Lecturers in Chemistry: M. Schofield, M.A., B.Sc.; L. R. Mernagh, B.Sc. Materia Medica and Pharmacy: J. M. Caley, M.P.S. Botany: G. D. Hogan, A.V.C.R.; D. C. Line, B.Sc. Physics: W. R. Torrance, B.Sc., M. Schofield, M.A., B.Sc. Session, September to April, followed by short summer session.

### SCOTLAND

#### Aberdeen, Robert Gordon's Colleges

Chemistry: W. Maitland, D.Sc.; R. Craven, B.Sc.; Constance M. McDowell, B.Sc., Ph.D.; J. Lynch, B.Sc. Pharmacy: E. G. Bryant, B.Sc., Ph.D., Ph.C.; D. S. Rattray, Ph.C.; Euphemia C. Barnett, B.Sc.; Andrew J. Thorburn, B.Sc.(Pharm), Ph.C.; James W. Tocher, M.B., Ch.B., D.P.H. Physics: J. D. Stewart, M.A.; John S. Morgan, M.A.; G. O. Clark, M.A., B.Sc.; James W. Collie, M.A., B.Sc. Day courses: Preliminary Scientific, Chemist and Druggist Qualifying, and Pharmaceutical Chemist Qualifying examinations, and Intermediate and Final examinations for the Degree of Bachelor of Pharmacy of the University of London, October 11, 1932, to June 30, 1933. Fee: Each course, £21. Evening Preliminary Scientific course over four years. Fees, 1st stage, £1; 2nd stage, £1 5s.; 3rd stage, £1 10s.; 4th stage, £1 15s.

#### Dundee Technical College and School of Art

Heads of Departments:—Botany and Pharmacy: D. McCall, B.Sc., Ph.D., Ph.C., F.L.S. Assistants: W. B. Proudfoot, Ph.C., and Miss Isabella S. McNicoll, B.Sc. Chemistry and Physics: C. W. Cochrane, D.S.O., B.Sc. Assistant: W. S. Liddle, B.Sc. Students are prepared for all examinations of Pharmaceutical Society of Great Britain and for degree of B.Pharm. of London University. Classes begin September 26. Evening classes in botany, chemistry and physics on September 12. Fees: Day classes, £22 1s.; evening classes, £1 to £1 10s. per session.

#### Edinburgh, Heriot-Watt College

Principal of College: J. Cameron Small, O.B.E., F.R.S.E. Professor of Chemistry: T. Slater Price, O.B.E., D.Sc., Ph.D., F.I.C., F.R.S. Lecturers.—Chemistry: James Sandilands, F.I.C., A.H.-W.C.; J. W. Ingham, M.Sc., F.I.C.; W. H. Craven, B.Sc., F.I.C.; R. G. M. Dakers, B.Sc., F.I.C., A.H.-W.C.; Hugh H. Campbell, B.Sc., A.I.C., A.H.-W.C.; Hugh B. Nisbet, B.Sc., F.I.C., A.H.-W.C.; Isaac A. Preece, M.Sc., Ph.D., A.I.C. Physics: Head of Department: William Watson, M.A., B.Sc. Lecturers: John Milne, B.Sc.; T. G. Malpas. Botany: Andrew Howison, M.A., B.Sc. Pharmaceutics: J. C. Henderson, Ph.C., and W. Martin, M.P.S., F.I.C., and demonstrators. Complete courses of instruction for examinations of Pharmaceutical Society.

#### Edinburgh, The Royal Dispensary and School of Pharmacy

Principal: Eric Knott, Ph.C., F.C.S., assisted by a fully-qualified and competent staff. Complete courses in the subjects of the Preliminary Scientific examination and the Chemist and Druggist Qualifying examination are provided in the day classes of this school. Fees: Preliminary Scientific examination, six months' course, £21; Qualifying Chemist and Druggist examination, nine months' course, £31 10s. Hours, 9 a.m. till 5 p.m. daily. Evening and part-time classes.

#### Glasgow Royal Technical College

Superintendent, and lecturer in botany: Professor David Ellis, D.Sc., Ph.D., F.R.S.E. Assistant lecturer in botany: Miss B. Lloyd, M.Sc., Ph.D. Lecturer in pharmacy and pharmacognosy: J. P. Todd, Ph.D., Ph.C. Assistant lecturer: E. J. Schorn, A.I.C., Ph.C.

Demonstrators: Gordon Rattray, Ph.C.; George R. Milne, Ph.C. Classes for the Preliminary Scientific, Chemist and Druggist Qualifying and Pharmaceutical Chemist Qualifying examinations, and also for the degree of B.Sc.(Pharm.), with evening classes for the Preliminary Scientific examination, begin in September. Degree course, 90 guineas; in four annual instalments of 22½ guineas; other day courses, 20 guineas per annum.

#### Paisley Technical College

Principal: Lewis F. Richardson, D.Sc. (Lond.), F.R.S. Head of Chemistry Department: P. C. Austin, D.Sc., F.I.C., Lecturers:—Chemistry: John Armour, B.Sc. (Lond.); A. R. Jamieson, B.Sc., F.I.C. Botany: Alex. C. MacLean, B.Sc. (Lond.); Blodwen Lloyd, Ph.D., M.Sc.; Gordon Rattray, Ph.C. Physics: J. Denholm, J. C. Young, B.Sc. (Lond.), W. B. Monaghan, B.Sc. Recognised for Preliminary Scientific examination. Day and evening classes.

### Dispenserships

Official positions as dispensers or "pharmacists" are open to registered chemists and druggists in hospitals, dispensaries and other public institutions as follows:—

**MENTAL HOSPITALS.**—The rate of pay for dispensing chemists in the London County mental hospital service is:—Men and women at the large hospitals, £270 per annum, rising by £15 annually to £405; women at the Maudsley Hospital and The Manor £220, rising by £10 annually to £250, and then by £12 10s. annually to £300. Annual leave of eighteen working days, rising to twenty-four after twelve years' service, is allowed. For the dispensing chemists at The Manor and the Maudsley Hospital respective number of days is twelve and eighteen.

**NAVY.**—The Pharmaceutical Service consists of the following grades: (a) Head pharmacist; (b) superintending pharmacists; (c) senior pharmacists; (d) pharmacists. The age of pharmacists on entry must not be less than twenty-one nor more than twenty-eight years. Candidates must possess certificates that they hold either the Major or the Minor qualification of the Pharmaceutical Society of Great Britain or the certificate of competency granted by the Pharmaceutical Society of Ireland, and produce testimonials and a full record of training qualifications and experience. Candidates chosen by the Medical Director-General of the Navy, Admiralty, London, S.W.1, will be summoned to interview before a Selection Board; no travelling expenses are payable out of public funds, and each successful candidate is required to pay a fee of £3. Members of the Pharmaceutical Service will be required to serve in any of R.N. Hospitals to which they may be appointed, either at home or abroad. Pharmacists will be paid a salary of £120 per annum on entry, rising by £5 annually to £170. They will also be provided with quarters suitable for unmarried men. When such quarters cannot be provided, an allowance of £35 a year will be granted in lieu.

**PUBLIC ASSISTANCE INSTITUTIONS.**—Appointments of dispensers under the old poor-law service are now made by boroughs or county councils. Under the Poor Law Order of 1930 such dispensers are not included in the list of principal officers. The salaries vary, each authority fixing its own scale. The positions are open to chemists and druggists and a few other classes of dispensers.

**PRISON COMMISSION.**—The rates of pay and allowances for pharmacists in the prison services are £2 10s. a week, rising to £3 15s., with medical attendance and medicines in certain conditions and a temporary bonus, varying with the cost of living. Candidates for appointment must hold the Pharmaceutical Society's qualification, and it is necessary to be within the prescribed age limits (twenty-four to thirty-five years). There is a probationary period of twelve months at the candidate's own expense.



## Ireland—I. Free State

THE principal enactments regulating the practice of pharmacy in the Irish Free State are the Pharmacy Act (Ireland), 1875, the Pharmacy Act (Ireland), 1875, Amendment Act, 1890, and the Sale of Poisons (Ireland) Act, 1870. Particulars of these Acts, so far as the sale of poisons is concerned, and of the Dangerous Drugs Act, 1920, are given in each annual issue of *The Chemist and Druggist Diary*. The Act of 1875 set up a class of qualified persons, pharmaceutical chemists, to keep open shop for retailing, dispensing and compounding poisons and medical prescriptions. The amending Act of 1890 brought into existence chemists and druggists and registered druggists on a statutory basis, and introduced a qualification for assistants to pharmaceutical chemists enabling them to transact the business of a shop during their employers' temporary absence. The Saorstat Eireann Juries Act, 1927, conferred on registered pharmaceutical chemists actually in business exemption from service on juries. The Irish Pharmacy Acts, 1875 and 1890, differ from the corresponding Acts for Great Britain in that mention is made of the subjects in which candidates for the Licentiate and the Registered Druggist qualification are to be examined—with the addition, in the earlier Act, of "such other subjects as may from time to time be prescribed by any regulations made in pursuance of this Act." The Registrar and Clerk to the Council of the Pharmaceutical Society of Ireland is Mr. James J. Kerr, P.C., M.P.S.I., 67 Lower Mount Street, Dublin.

### Preliminary Examination

This examination must be passed prior to the service in pharmacy required by the Regulations for the Licence examination, unless such service has been commenced before January 1, 1907. The subjects of examination are:—Group A, English, pass Standard, 40 per cent.; Latin, pass Standard, 40 per cent.; mathematics, pass Standard, 40 per cent.; Irish, pass Standard, 30 per cent. Group B, Elementary chemistry, pass Standard, 40 per cent.; elementary botany, pass Standard, 40 per cent.; elementary science, pass Standard, 40 per cent.; a modern language (other than Irish) pass Standard, 40 per cent. The standard is that of the Intermediate Certificate syllabus. A viva-voce test will be made in the case of Irish and any modern language other than English. In awarding marks, spelling, handwriting, and neatness of work are taken into account. Candidates must take all the subjects in Group A, also one other subject from Group B. All subjects must be passed at one examination. A candidate who obtains 70 per cent. of the total marks, and not less than 50 per cent. in each subject, shall be awarded a pass with honours. The following certificates may be accepted by the Council of the Pharmaceutical Society in lieu of the Preliminary examination:—(a) The Matriculation certificate, National University of Ireland; (b) The Matriculation certificate, Queen's University of Belfast; (c) Junior Freshman Term examination, Dublin University; (d) Preliminary examination, Royal College of Physicians and Surgeons in Ireland; (e) The Intermediate or Leaving certificate of the Secondary Education Branch

of the Department of Education; (f) Any such examination as shall be deemed by the Council of the Pharmaceutical Society (with the sanction of the Minister for Education) as equivalent to the Preliminary Examination certificate of the said Society. The following conditions shall apply to the acceptance of all such certificates:—(1) A registration fee of three guineas shall be paid. (2) The certificate must show that the candidate has passed in Irish, English, Latin, mathematics; (3) in all examinations passed after April 1, 1931, the candidate must pass in an additional subject selected from Group B, Preliminary Examination syllabus; (4) all subjects must have been passed at one and the same examination.

The examination is held at 67 Lower Mount Street, Dublin, on the first Thursday and following day in January, April, July and October, at 10 a.m. A fee of £3 3s. must be lodged with the Bank of Ireland to the credit of the Society, and the receipt forwarded to the Registrar (Mr. James J. Kerr, P.C., M.P.S.I.), 67 Lower Mount Street, Dublin, with birth certificate and the name of the optional subject, at least fourteen clear days before the commencement of the examination. The re-examination fee is £2 2s. Copies of examination papers are supplied for a limited period at 3s. a set, post free.

### IRISH (FREE STATE) PHARMACY QUALIFICATIONS

(IN BRIEF)

#### L.P.S.I.

1. Pass Recognised Preliminary before apprenticeship.
2. Four years' apprenticeship in a pharmacy.
3. Courses, in an approved institution, of three months in (a) Theoretical Chemistry, (b) Botany and Materia Medica, (c) Practical Chemistry.
4. Pass Pharmaceutical Licence Examination after the age of twenty-one.

#### R.D.

1. Serve four years as assistant or apprentice.
2. Pass Registered Druggist Examination.

#### PHARMACEUTICAL ASSISTANT

As for L.P.S.I., but need not be twenty-one, nor have taken courses of instruction.

### Pharmaceutical Licence

The qualifying examination for pharmaceutical chemist in Ireland is that of Licentiate. The conditions to be fulfilled before entering upon the Pharmaceutical licence examinations are:—

(a) After preliminary registration the person must serve four years as apprentice or assistant with, and in the sole employment of a pharmaceutical chemist, or a chemist and druggist of Great Britain, or an apothecary, or a firm of legally qualified pharmaceutical chemists, chemists and druggists of Great Britain, or apothecaries in an open shop, and the candidate must spend the business day with his employer. (Provision is made for service with more than one employer, and, for those who have served four years with a chemist and druggist or registered druggist in Ireland, two years' further service with a pharmaceutical chemist or an apothecary suffices.)

(b) Attend three-months' courses of lectures in theoretical chemistry and in botany and materia medica, and a three-months' course of practical chemistry (after the lectures in theory) at one or other of the following approved institutions:—

- School of the Pharmaceutical Society of Ireland.
- Central Technical Institute, Waterford.
- Municipal Technical School, Drogheda.
- Municipal Technical Institute, Limerick.
- City of Dublin Technical Schools.
- Queen's University, Belfast.
- University College, Galway.
- Royal College of Science for Ireland, Dublin.
- Royal College of Surgeons in Ireland, Dublin.
- School of Physic, Trinity College, Dublin.
- Crawford Municipal Technical Institute, Cork.
- Central Technical Institute, Clonmel.
- Municipal Technical Schools, Dundalk.
- City of Galway Technical Institute.
- Crawford Municipal School, Cork.
- University College, Dublin.
- Trinity College, Dublin.

Some of these are approved for all the subjects, others for one or two subjects only.



# Educational Information

- (c) The person must be twenty-one years of age.  
 (d) Declarations and certificates of the foregoing must be lodged with the Registrar when the candidate applies for entry to the Licence examination.

The examination commences on the Monday following the second Tuesday of January, April, July and October, at 10 a.m., and is held in the Pharmaceutical Society's House, Dublin. Candidates must give notice of intention to attend, to the Registrar, fourteen clear days before the date of examination, and this must be accompanied by a receipt of having paid the fee (£10 10s.) into the Bank of Ireland to the credit of the Society. The necessary forms should be procured well in advance. The re-examination fee is £4 4s. The examination, which is written, practical and oral, is in the following subjects:—

**BOTANY:** Recognition of the principal indigenous plants used in medicine, their natural orders, and the characters of their several parts.

**MATERIA MEDICA:** Recognition of B.P. drugs; their characters, active principles, sources, official preparations, and adulterations.

**CHEMISTRY:** Elementary laws of chemistry and physics, including equations. Recognition of B.P. chemicals, description of the processes by which they are obtained, qualitative analysis (including B.P. tests) and volumetric analysis, and a practical examination in these subjects. (The Council recommends "Text Book of Pharmaceutical Chemistry" (Bentley and Driver)).

**PRACTICAL PHARMACY:** Translation of Latin prescriptions, detection of dangerous doses, and compounding and dispensing. Processes of making and recognition of B.P. non-chemical preparations, and an intimate knowledge of the Sale of Poisons (Ireland) Act, 1870.

### Assists to Pharmaceutical Chemists

This examination, instituted as a qualification for assistants left temporarily in charge of the business of a pharmaceutical chemist, is held quarterly, being on the Thursday following the examination for the Pharmaceutical Licence. This permits candidates "referred" at the latter examination to enter for the assistants' examination on payment of a fee of £1 1s. New candidates pay, in addition, a registration fee of £1 1s. The re-examination fee is £1 1s. The conditions are similar to those of the Licence examination, but the candidate need not be twenty-one years of age, nor have taken a special course of instruction. The subjects are:—

**PRESCRIPTIONS:** Candidates will be required to read autograph prescriptions, translate them into English, render a correct translation of the directions for use, and detect unusual doses.

**PRACTICAL DISPENSING:** To weigh, measure and compound medicines, write the directions in suitable language, finish and properly direct each package.

**MATERIA MEDICA AND QUALITY OF SPECIMENS:** To recognise the Pharmacopœia chemicals in frequent demand, and specimens of roots, barks, leaves, fruits, resins and gums in ordinary use; also to estimate the quality of each specimen submitted, and its freedom from adulteration.

**PHARMACY:** To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, such as extracts, tinctures and powders, and give the proportions of the more active ingredients.

The candidates will also be examined in the Sale of Poisons (Ireland) Act.

### Registered Druggists

The subjects of the examination are prescribed by the Pharmacy Act (Ireland) Amendment Act, 1890, and are as follows:—

English orthography and composition.

Arithmetic, and the weights and measures of the British Pharmacopœia.

The appearance and properties of the various drugs and chemicals in general use.

The Sale of Poisons (Ireland) Act.

The examination is open to anyone who has served as an assistant or apprentice for not less than four years

to a pharmaceutical chemist, chemist and druggist, registered druggist, or licentiate apothecary, keeping open shop, and is held in Dublin on the second Tuesday of January, April, July and October. Applicants for admission, accompanied by the necessary declarations of service and a receipt for £4 4s. placed to the credit of the Society in the Bank of Ireland, must be made to the Registrar at least fourteen days before the dates of the examinations. The re-examination fee is £2 2s.

## II—Northern Ireland

### Preliminary Examination

Pharmacy in Northern Ireland differs from pharmacy in Great Britain and in the Irish Free State in that the registered proprietors of retail businesses will all, eventually, be pharmaceutical chemists, the former class of registered druggists having either become pharmaceutical chemists since 1925 or having been registered under a provision which is not being continued permanently. The Pharmacy and Poisons Act (Northern Ireland), 1925, under which this change is taking place, provided a modified examination for registered druggists who wished to qualify as pharmaceutical chemists; and many have thus secured the higher qualification. The Queen's University of Belfast offers the degree of B.Sc. in Pharmaceutics, the examination for which exempts from examination by the Pharmaceutical Society in pharmacognosy and chemistry, Part II, and from the written examination in pharmacy, practical pharmacy, Latin and prescription-reading. Full particulars may be obtained from the Registrar of the University or the Registrar of the Society.

Before a student can become apprenticed he must pass a Preliminary examination in English, mathematics, and three other subjects (one of which must be a language from the following list: Latin, Greek, French, German, Spanish, Italian, Irish, modern history, geography, botany, chemistry, physics or mechanics. The five subjects must have been passed at one, or not more than two, of the following examinations:—The Matriculation examination or the Pharmaceutical Preliminary examination of the Queen's University, Belfast, or any examination accepted by the University as equivalent to these examinations, including the Preliminary examinations of the Royal College of Physicians and Surgeons in Ireland, Educational Institute of Scotland, College of Preceptors, Junior Certificate of the Ministry of Education, Northern Ireland. The majority of candidates will probably take the Pharmaceutical Preliminary of the Queen's University, for, although the Pharmaceutical Society of Northern Ireland does not hold its own Preliminary examination, the University authorities in the examination mentioned conduct what is virtually the official examination. Candidates in the first instance must apply to the Secretary of the Pharmaceutical Society of Northern Ireland, 55-56 Scottish Provident Buildings, Belfast, at least one month before the last day of entry for Matriculation. They will be examined on the papers set for the Queen's University Matriculation examination, and must reach the standard set for the Pharmaceutical Preliminary, which is below Matriculation standard. An application for the Preliminary certificate of apprenticeship to a pharmaceutical chemist must be accompanied by £3 3s. Having obtained this, the student will register officially as an apprentice at the Ministry of Home Affairs (fee 5s.). A four-years' apprenticeship to a pharmaceutical chemist or four years with a registered druggist and two years with a pharmaceutical chemist then begins.

### Pharmaceutical Chemists

Having satisfied the requirements as to apprenticeship and attendance at approved courses of instruction the candidate under the new Regulations must pass Part I, the subjects of which are botany, chemistry Part I,

## Educational Information

physics and business methods (or pass the Intermediate examination of the Queen's University, Belfast):—

**BOTANY.**—The elements of plant morphology and anatomy, physiology classification. Practical examination of plants and preparation of sections for the microscope.

**CHEMISTRY, PART I.**—An elementary knowledge of chemical action, laws, valency; non-metals, metals, carbon, methane, ethylene and acetylene; methods of determining carbon, hydrogen, oxygen and nitrogen in organic compounds. Solve simple problems in weight and volume. *Practical.*—Preparation of inorganic substances; qualitative and quantitative (volumetric) analysis.

**PHYSICS.**—Elementary knowledge of mass, energy and work, solids, liquids, gases; temperature; propagation of light, magnetism and electricity. *Practical.*—Perform simple experiments on the above.

**BUSINESS METHODS.**—Book-keeping, including business books required in a pharmacy; double entry; balance sheets; commercial law relating to master and servant, leases, agreements and contracts. A working knowledge of matters likely to arise in pharmaceutical practice relating to licences, insurance, income tax, partnership and company trading, elementary principles of advertising and salesmanship; modern methods of window display; shop-craft, including arrangement of a shop, windows, heat, ventilation, counters, wall and counter cases and general lay-out.

Having passed Part I at not more than two examinations, the candidate supplies evidence of age, 21, attendance at approved courses in the subjects of Part II as follows. (Alternatively, the candidate may submit to the Board of Examiners evidence that he has passed the examination in all subjects of Final Part I for the B.Sc. in pharmaceutics of the Queen's University, Belfast, and present himself for oral and practical examinations in pharmacy, practical pharmacy, Latin and prescription-reading. A candidate who fails in any of these subjects must present himself in all three at a subsequent examination.)

**PHARMACOGNOSY.**—Recognition of B.P. drugs, their sources, characters, active principles, varieties, natural orders, knowledge of B.P. tests.

**PHARMACY.**—Knowledge of operations requiring heat, disintegration of solid substances, filtration, expression, solution, art of dispensing, manufacture of galenicals.

**LATIN AND PRESCRIPTION-READING.**—Translation of Latin prescriptions; detection of errors; knowledge of posology; percentages.

**PRACTICAL PHARMACY.**—Perform operations of the B.P. in making galenicals. Compound and dispense medicines.

**FORENSIC PHARMACY.**—Knowledge of poisons in the fourth Schedule to the Pharmacy and Poisons Act (Northern Ireland), 1925, and conditions relating to keeping, selling and dispensing. Dangerous Drugs Acts and Regulations.

**CHEMISTRY, PART II.**—General knowledge of B.P. and common alkyl and aryl compounds, adulterations in B.P. inorganic and organic compounds and methods of determining purity. *Practical:* Identity specified organic compounds; detect adulterants of B.P. substances; volumetric and nitrometric determinations; methods of preparing more important inorganic and specified organic compounds; alkaloidal determinations.

The examinations are held in June and December, examination fees being £4 4s. for Part I and £8 8s. for Part II. For re-examination, half these fees.

Amended Regulations for the certificate of assistant were made on March 18, 1932 (*C. & D.*, 1932, I, 581).

### Irish Educational Institutions

#### Pharmaceutical Society's Schools

67 Lower Mount Street, Dublin

Director: Chemistry School, Professor H. Norminton, M.Sc. Botany and Materia Medica School, Dr. W. H. Ashmore, L.R.C.P.I., M.D., B.Ch., B.A.O. (N.U.I.). A. F. Collins, M.P.S.I. Pharmacy Class, Mr. Thomas J. Smith, M.P.S.I., on Mondays and Wednesdays, from 7.30 to 9.30, and the student must attend at least twenty lectures to obtain a certificate. Three sessions commence on October 1, January 1, and April 1. Fees: Theoretical chemistry (three months), £1 11s. 6d.; practical chemistry (100 hours), £8 8s.; practice course (three months), past students, £2 2s.; students of other schools, £4 4s.; botany and materia medica (three months), £3 3s.; pharmacy, £4 4s.; students of other schools, £5 5s. Botany and materia medica classes held on Tuesday and Thursday evenings.

#### Belfast Municipal College of Technology

Head of Chemistry Department: Professor H. Wren, D.Sc.; Lecturers in pharmaceutical subjects, C. J. Still, Ph.D., M.Sc., C. W. Young, Ph.C., Miss Hughes, B.A., M.Sc., A.I.C., J. W. Porter, F.I.C., F.R.C.Sc.I., L. Arndell, B.Sc., Ph.C. Under the co-ordination scheme with the Queen's University of Belfast students may also obtain the degree of B.Sc., in Pharmaceutics.

### Apothecaries' Assistants

Section 17 of the Apothecaries Act, 1815, enacted that an examination should be instituted for the purpose of granting certificates to persons "to act as assistant to an apothecary in compounding and dispensing medicines." The conditions are as follows:

(a) The candidate (male or female) must be at least eighteen years of age. (b) A certificate of general education up to the age of sixteen must be produced. (c) A certificate signed by a principal teacher of chemistry at a university, college, technical institute, school of pharmacy, or a secondary school, or by a person possessing a university degree in science, or a fellowship of the Institute of Chemistry. (d) A certificate signed by an assistant of the Society holding a public appointment, a registered chemist and druggist, or a registered medical practitioner. (e) The candidate must pass an examination in (1) compounding and dispensing medicines (a practical examination), (2) chemistry, materia medica, pharmacy, and the translation of prescriptions (an oral examination).

Particulars are obtainable from the Registrar, Society of Apothecaries of London, Water Lane, London, E.C.4. Fee £6 6s.

The Apothecaries' Hall of Ireland has a similar examination for the certificate of assistant to an apothecary. Fee, £8 8s. Particulars from the Registrar, 95 Merrion Square, Dublin.



## Educational Information

### Scholarships and Prizes

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN offers annually three medals for competition by pharmaceutical chemists who have passed the Pharmaceutical Chemist Qualifying examination during the year, and were members or student-associates of the Society at the time of passing. The (written) examination is in *materia medica*, botany and chemistry, and is held shortly after the Major examination in April. The first prize is the Pereira silver medal and books worth £7 10s.; second, the Society's silver medal and books worth £2 10s.; and third, the Society's bronze medal and books worth £2 10s. The Society also has in its gift the following:—

*The Jacob Bell Scholarship.*—A scholarship of the value of at least £56 10s., offered annually by the Society as a memorial of Jacob Bell. The award comprises free instruction at the Society's School, a sum of money and a gift of books. The scholarship, tenable for one or two years in respect of various courses of study at the option of the Bell scholar, is open only to student-associates of the Society. Details are obtainable from Mr. Hugh N. Linstead, Secretary and Registrar, 17 Bloomsbury Square, London, W.C.1.

*The Burroughs Scholarship* of £100 per annum, awarded (together with apparatus, etc.) to a pharmaceutical chemist or a graduate in pharmacy of an approved university every fourth year for the purpose of obtaining instruction in the Society's laboratory, and tenable for two years.

*The Devon and Cornwall Exhibition in Pharmacy*, of the annual value of about £25, is tenable at the University College of the South-West, Plymouth, and is applied to the payment of tuition fees. Candidates must have been trained during a specified period in Devon or Cornwall.

*Herbarium Prizes.*—The Council of the Society offers annually to its student-associates a silver medal, a bronze medal and certificates of honour, for a herbarium of British plants collected in any part of the United Kingdom, the Channel Islands or the Isle of Man between January 1 in one year and July 1 in the following year.

*The Charles James Hewlett Memorial Exhibition* is of the value of about £15, and is awarded annually on the recommendation of the dean of the Society's School to the student-associate (other than a Bell scholar) who most distinguishes himself during attendance at the first year of the course for the Pharmaceutical Chemist Qualifying examination or for the B. Pharm. degree.

*Leverhulme Scholarships.*—A fund endowing three scholarships of the annual value of £60 each was presented to the Society by the late Lord Leverhulme in 1923. The first scholarship carries with it gold medal and £5 worth of books, and the second a prize of books to the value of £5.

*The Manchester Pharmaceutical Association Scholarship* is open to student-associates of the Pharmaceutical Society who have served an apprenticeship in Lancashire, Cheshire, or the High Peak Parliamentary Division of Derbyshire. It has an annual value of about £34.

*The Petrie Trust Bursary*, of the annual value of about £16, is awarded each year to a student-associate of the Society who has completed three years' apprenticeship in the city or county of Aberdeen, and has not previously studied at a school of pharmacy.

*The Rammell Studentship*, of the value of £100, is tenable for a year by a member of the Society in the Society's Pharmacological Laboratories.

*The Ransom Research Fellowship*, of the value of £100 per annum and tenable for two years, was founded in 1917 to promote the investigation of crude drugs, and is awarded every fourth year to a pharmaceutical chemist, or a graduate in pharmacy of an approved university.

*The Redwood Scholarship*, of the value of £100 per annum and tenable for two years, is awarded every fourth year (together with apparatus, etc.) to a pharmaceutical chemist to obtain instruction in the Society's research laboratory.

Until further notice, the Jacob Bell, Manchester and Leverhulme scholarships and the Devon and Cornwall exhibition will be awarded in accordance with the following regulations:—

- There shall be one examination for all the scholarships, which will be conducted by an examiner or examiners appointed by the Council of the Society, and the awards made by the Council on the recommendation of such examiner or examiners.

- The examination will be held on the third Tuesday and

Wednesday in June of each year in Aberdeen, Birmingham, Cardiff, Edinburgh, Exeter, Leeds, London, Manchester and Newcastle, or such other centres as may be selected.

- At the time of giving notice of their intention to enter for the examination, competitors must be student-associates.

- No person shall be awarded more than one scholarship, but a person may compete for all the scholarships for which he is eligible at the same examination. Should he gain marks entitling him to the award of more than one scholarship he will be permitted to select the scholarship he wishes to have awarded to him.

- On the day which the examination is held, competitors must be not less than nineteen nor more than twenty-two years of age.

- Competitors must give notice to the registrar in London on or before June 1 in the year in which the examination is to take place. The notice must be accompanied by a registrar's certificate of birth, an employer's testimonial, and a declaration as to practical training. At the same time the competitor must state (a) the language subject in which he wishes to be examined, and (b) the examination centre at which he wishes to attend.

**THE PHARMACEUTICAL SOCIETY OF IRELAND.**—The Council awards annually a gold and a silver medal to pharmaceutical chemists who have during the year passed the Licence examination on a first attempt and obtained the following standard of marks: For the gold medal, not less than 240 marks out of 300, and 65 in each of the three subjects; for the silver medal, 230 marks out of 300, and 60 in each of the three subjects. Two preliminary scholarships (1st class, value £10 10s.; 2nd class, value £5 5s.) are awarded each September. Particulars may be obtained from the Registrar.

**THE CHEMISTS' AND DRUGGISTS' SOCIETY OF IRELAND.**—The Haslett Gold Medal is awarded annually to the student who takes the first place at the Pharmaceutical Society of Ireland's Registered Druggist examination.

**THE FAIRCHILD SCHOLARSHIP**, which was founded in 1904 by Fairchild Brothers & Foster. The object of the scholarship is to encourage study during apprenticeship. The examination is designed not as a test for completed studies, but to see how far the student has used his time and powers of observation during apprenticeship so as to fit himself or herself to appreciate fully the subsequent course of study. The value is £60, and, in addition, there are prizes of £5 for the best student in England, Scotland, Wales and Ireland, apart from the scholarship. The examinations take place during June, and entries should be made on, or before, June 1. The examinations are held in London, Manchester, Edinburgh, Cardiff, Dublin and Belfast, the amount over 5s. railway fare being refunded if application is made to the Secretary. The age limit is not less than twenty years on July 1, 1933, or over twenty-two on January 1, 1933, and all competitors must be registered students or apprentices of pharmacy. The successful student must commence his studies within the year after winning the scholarship. The subjects are: Chemistry; physics; botany; practical pharmacy and prescription reading; business knowledge. The trustees are Mr. Peter Boa, Edinburgh; Mr. Albert Hagon, Cardiff; Mr. William Kirkby, Manchester; Mr. A. J. Phillips, London. All communications should be addressed to the Secretary to the Trustees, Mr. Herbert Skinner, Ph.C., Albert Chambers, 64-65 Holborn Viaduct, London, E.C.1.

**THE KINNINMONT SCHOLARSHIP.**—Instituted in 1894 by the late Alexander Kinninmont, Ph.C., for pharmacy students in Glasgow and the West of Scotland. The scholarship, of the value of £10 10s., tenable at the Royal Technical College, Glasgow, is awarded on the result of a written examination in chemistry, botany and physics, held in Glasgow in September of each year.

**"CORNERS FOR STUDENTS" PRIZES.**—THE CHEMIST AND DRUGGIST conducts a monthly competition in qualitative chemical analysis. The next series of competitions, which commences in October, will give students of chemistry excellent practice in manipulation and deduction.



## Medicine

The duration of study for the subjects requisite for a degree or diploma in medicine is not less than five years, with a minimum outlay of about £1,500. Scholarships, bursaries and prizes are a factor, for those who obtain them, in lessening expenses during the period of training. The medical curriculum, particulars of which are given in the following paragraphs, is being critically discussed in the medical Press, and discussion may eventually bring about some modification in the subjects taught or in the relative importance assigned to them. It is estimated that about 75 per cent. of those who qualify in medicine become general practitioners; the others choose between the vocation of a specialist and a career in the Forces, the public services, a hospital, a laboratory, and so forth. The social position of the medical man is, as a rule, an excellent one.

The General Medical Council, the examining, registering and disciplinary body set up by the Medical Act, 1858, issues (price 1s.) a "Memorandum on the Procedure to be Adopted by those who Desire to Enter the Profession of Medicine . . . ." Candidates for the profession are required to possess, at the outset, a general education of the standard needed for matriculation in arts or science at a British university, together with evidence of having passed an approved examination in elementary physics and elementary chemistry and of having commenced medical study, and, after registration as medical students, to take a course of study and training, extending to at least five years, at a recognised institution. There are two types of medical qualification, the degrees bestowed by the universities and the diplomas given by such bodies as the Royal Colleges of Physicians and Surgeons.

### Preliminary Examinations

The education committee of the General Medical Council issues a list of examining bodies, the examinations of which in general education fulfil the conditions laid down by the Council as to admission as a medical student (see "Registration as Medical Students"). These examinations include: (1) the final arts or science degree examination of any university of the United Kingdom or of the British Dominions; (2) the matriculation examination of any university in Great Britain or of certain examining bodies in Ireland; (3) a number of school and other examinations accepted by approved universities as equivalent to their respective matriculation examinations. Any preliminary examination must include: (1) English; (2) elementary mathematics; (3) a language from a selected list, other than English; (4) a second language from the list or one of the following subjects: higher mathematics, history, geography, chemistry, physics, zoology, botany, biology, geology. A Joint Matriculation Board (Secretary, 315 Oxford Road, Manchester) governs the Matriculation examinations of the Universities of Manchester, Liverpool, Leeds, Birmingham and Sheffield. The College of Preceptors, Bloomsbury Square, London, W.C.1, holds in March and September of every year, at various centres in Great Britain, a Professional Preliminary examination for certificates recognised by the General Medical Council and other bodies. The fee is 25s., plus a local fee of from 5s. to 15s. A similar examination is held (fee, 21s.) by the Educational Institute of Scotland, 47 Moray Place, Edinburgh, in February, May, August and November (calendar, 6d.; examination papers, 1s.). The examination centres are Edinburgh, Glasgow, London, Liverpool and Dublin. The subjects which are compulsory and those which are optional differ to some extent in the requirements of the various universities and other qualifying bodies; consequently, the candidate must either matriculate at the university at which he or

she intends to study or ascertain that the Preliminary examination certificate held is one that will be accepted.

### Registration as Medical Students

The way of entrance to the medical profession is laid down in "Regulations of the General Medical Council in Regard to the Registration of Medical and Dental Students" (is., post free from the Registrar, 44 Hallam Street, London, W.1).

The following is a summary of the regulations:

(1) Before registration as a student every candidate shall produce evidence that he has attained the age of seventeen years.

(2) The minimum standard of general education required will be that of University matriculation or entrance examination in arts or pure science.

(3) Before registration as a student every applicant shall be required to have passed an approved examination in general education (see "2"), and, in addition, an examination in elementary physics and elementary chemistry conducted or recognised by one of the licensing bodies.

(4) A student who has diligently attended an approved course of instruction in elementary biology at a secondary school or other teaching institution recognised by a licensing body may be admitted to the Professional examination in elementary biology, if that body sees fit, immediately after his registration as a student.

The commencement of the course of professional study recognised by any of the licensing bodies should not be reckoned as dating earlier than fifteen days before the date of registration. The Registrars to whom, according to the division of the United Kingdom in which the student is training, application must be made for registration are:

The Registrar of the General Medical Council, 44 Hallam Street, Portland Place, London, W.1.

The Registrar of the Scottish Branch Council, 12 Queen Street, Edinburgh.

The Registrar of the Irish Branch Council, 35 Dawson Street, Dublin.

The Registration Office for the Irish Free State is Room 123, Custom House, Dublin.

The General Medical Council enjoins that in every course of professional study and examination, which must occupy not less than five academic years, the following subjects shall be comprised:

(1) *Elements of General Biology*, including practical work and an introduction to the study of embryology; (2) *Chemistry, Physics, and Biology* in their application to medicine; (3) *Human Anatomy and Human Physiology*, including dissection, histology, elements of human embryology, biochemistry and biophysics; (4) *Elementary Bacteriology*; (5) *Pathology*; (6) *Pharmacology and Materia Medica*, including pharmacological chemistry; (7) *Forensic Medicine, Hygiene, and Public Health*; (8) *Medicine*, including applied anatomy and physiology, clinical pathology, and therapeutics; (9) *Surgery*, including applied anatomy and physiology, and clinical pathology; (10) *Midwifery and Diseases of Women*.

A few bodies allow medical studies to be commenced at approved teaching institutions other than medical schools, and this principle is extended to graduates in arts or science at approved universities. No general exemption of this kind is given to registered chemists and druggists except as regards training in practical pharmacy. The Preliminary examination must have been of the standard given in the regulations, but the colleges and universities consider applications for exemption from any part of the medical examinations when such subjects as chemistry and biology have been taken at recognised institutions. Each examining body issues regulations as to the studies required, and the schools of medicine arrange their courses in conformance with such requirements.

### University Degrees

In the following paragraphs we indicate concisely the conditions framed by the universities of the places named for the ordinary degrees in medicine and surgery



## Educational Information

(M.B., Ch.B., or the equivalent degrees). For other and higher degrees further courses of study and fees are requisite.

**ABERDEEN.**—The two degrees are conferred together, and cannot be taken separately. The curriculum extends over a period of not less than five years, during which the candidate must attend the prescribed courses of instruction. The fee for the two degrees is £34 13s., payable in four instalments. Bursaries, scholarships and fellowships to the annual value of £1,200 are obtainable. Further information may be obtained from the Secretary, or from the University Press.

**BELFAST.**—Three academic years at least, out of the five prescribed for the curriculum, must be passed in the University. The Dean of the Faculty of Medicine is Professor W. J. Wilson, M.D.

**BIRMINGHAM.**—The course extends over six years, and there are five examinations. Several scholarships are available. A minimum of three years must be spent in the University. Dean of the Medical Faculty, Dr. Stanley Barnes, University Medical Buildings, Edmund Street.

**BRISTOL.**—There are three examinations, the total fees for qualifying (including graduation fee) amounting to about £28. The curriculum occupies six years, three of which must have been passed in Bristol. Particulars of scholarships and prizes are given in the University (Faculty of Medicine) prospectus. Secretary, Miss Winifred Shapland.

**CAMBRIDGE.**—Students are required to pass the Previous examination or its equivalent before proceeding to the three examinations for the M.B. degree. The respective fees for these three examinations are £5 5s., £6 6s., and £10 10s. The degree fees amount to £8. A thesis must be composed by each candidate, and must be publicly read (or such portion of it as the Regius Professor shall direct) by the author. There is no separate examination for the B.Chir. degree. The Registry is Mr. E. Harrison, M.A.

**DUBLIN.**—Candidates for the degrees in medicine, surgery and obstetric science must be of B.A. standing and must have completed five years in medical studies. The degree fees amount to £17. Dean of the Faculty of Physic, Dr. A. F. Dixon.

**DURHAM.**—There are four examinations for the M.B., B.S. degrees, and the course of study extends over five years, one of which must be spent at the University's College of Medicine. The fees for matriculation and examination amount to £35 3s. Numerous scholarships and prizes are offered. Full information may be obtained from the Dean of the College, University of Durham College of Medicine, Newcastle-upon-Tyne.

**EDINBURGH.**—The course for the degree of M.B. and Ch.B., which are not conferred separately, extends over five years. Candidates must attend for not less than three years at a recognised hospital. There are four examinations, the fees amounting to £34 13s. Several scholarships, bursaries and prizes are offered for competition. Dean of the Faculty of Medicine, Professor Sydney Smith, M.D.

**GLASGOW.**—There are four examinations. The period of study prescribed is five years, with specific regulations as to the lengths of the various courses of instruction. The fees (after registration) for the degrees of M.B., Ch.B., amount to £34 13s. Several bursaries

and prizes are open to competition. The Dean is Professor Andrew Hunter.

**IRELAND.**—The National University of Ireland confers the M.B., B.Ch., and B.A.O. degrees (simultaneously) after passing four examinations during a minimum period of five years' study. Particulars may be obtained from the Registrar, National University, Dublin.

**LEEDS.**—There are three examinations, and the course of study extends over five years. Attendance at approved courses of instruction is obligatory. The matriculation, examination and conferment fees amount to £35. Dean of the Faculty of Medicine, Professor J. K. Jamieson, M.B., C.M.

**LIVERPOOL.**—The curriculum extends over six years, two of which must be passed in the University. There are three examinations, with a fee of £5 each, and a graduation fee of £6. Several fellowships, scholarships and prizes are available. Dean of the Faculty, Professor W. J. Dilling.

**LONDON.**—The normal course of study extends over five and a half years, and there are three examinations, the second of which is divided into two parts. The examination fees for the double degree amount to £31 10s. A large number of institutions in the United Kingdom and the Colonies are recognised for teaching and giving certificates, and various concessions are granted in respect of examinations already passed at recognised institutions. There are several studentships and research grants available. Internal and external students should apply respectively to the Academic Registrar and the External Registrar, University of London, South Kensington, S.W.7.

**MANCHESTER.**—Four examinations for the two degrees, after study extending over six years, must be passed. Two of these years must be spent in the University. Several scholarships, exhibitions and other competitive prizes are offered to students. Examination and conferment fees amount to £42.

Full information is obtainable from the Dean of the Medical School (as to classes) and the Registrar (as to examinations).

**OXFORD.**—The regulations stipulate that candidates must hold an Oxford Arts degree as a prerequisite. Two examinations are held (after a preliminary examination in natural science) for the degree of B.M.; the degree of B.Ch. is granted with that of B.M. after passing the second examination. The minimum time in which the degrees can be obtained is six years from the commencement of "residence." The Dean of the Medical School is Dr. M. H. MacKeith, Department of Medicine, University Museum; and the examination statutes are published by the Oxford University Press.

**ST. ANDREWS.**—The course for the M.B., Ch.B. degrees (which are not separable) extends over at least five years, and the prescribed order of studies must be followed. There are four examinations, the fees amounting to £34 13s. Dean of the Faculty, Professor James Charteris, M.D., Medical School, Dundee; Secretary of the University, Mr. Andrew Bennett.

**SHEFFIELD.**—There are four examinations for the M.B., Ch.B. degrees, the curriculum occupying five and a half academic years. Candidates who are referred in Part II or Part III of the Final examination must produce evidence of having received subsequent instruction satisfactory to the Faculty before entering for re-

### To qualify as a MEDICAL PRACTITIONER

- (1) Pass recognised preliminary and pre-medical examinations.
- (2) Produce evidence of having commenced study at an approved institution, and be registered as a student by one of the Registrars of the General Medical Council.
- (3) During a curriculum of not less than five years, pass, at proper intervals, the necessary examinations.



# Educational Information

examination. Several scholarships are available. Dean of the Faculty, Professor J. B. Leathes; Registrar of the University, Mr. W. M. Gibbons, M.A.

WALES.—The course of study is divided into two parts, each extending over three academic years. A degree, in science or arts, of some approved university, is necessary before the medical degrees can be conferred. Examination fees are £20 10s. The constituent colleges are Aberystwyth, Bangor, Cardiff and Swansea. Dean of the Faculty, Professor A. W. Sheen, M.S.; Secretary, Mr. J. James, M.A., University College, Cathays Park, Cardiff.

## Medical and Surgical Diplomas

M.R.C.S.ENG. AND L.R.C.P.LOND.

The Examining Board of the Royal College of Physicians of London and the Royal College of Surgeons of England (known as "the Conjoint Board") grant a joint diploma (the "Double Qual.") for registration as a general medical practitioner. There are two professional examinations (in addition to the Preliminary examination and Pre-medical examination) during the five years' curriculum subsequent to registration as a medical student. The books of questions for certain years may be obtained from Taylor & Francis, Red Lion Court, London, E.C.4.

The subjects of the *First Professional Examination* are:—Section I, (a) Anatomy, including histology and embryology; (b) Physiology, including biochemistry. Section II, Pharmacology and *materia medica*. Candidates may present themselves for the two sections together or separately, but they must take Parts (a) and (b) of Section I together until they have passed in one or both parts. Candidates will not be allowed to pass in one part unless they obtain at the same time at least half the number of marks required to pass in the other part. Section II may be passed at any time before the candidate enters for the Final examination. Before admission to the First examination, candidates must produce evidence of having attended:—For Section I: (1) Courses of instruction in anatomy, including embryology, during five terms, during which they must have dissected the whole body; (2) courses of instruction in physiology, including biochemistry and biophysics, during five terms; (3) a course of instruction in histology. For Section II: Courses of instruction in pharmacology and *materia medica*. The fee for the whole examination is £10 10s.

The subjects of the *Final Professional Examination* are:—Section I, Pathology (including morbid anatomy, morbid histology and clinical pathology) and bacteriology. Section II, Part I, Medicine, including medical anatomy, forensic medicine and public health. Part II, Surgery, including surgical anatomy and the use of surgical appliances. Part III, Midwifery and gynaecology. They will be required to produce evidence of having completed courses of study in pathology (including morbid anatomy and histology), *post-mortem* work, clinical pathology, bacteriology, clinical medicine, practical surgery, forensic medicine, mental diseases, public health, anaesthetics, midwifery and gynaecology, applied anatomy and applied physiology, and operative surgery. Certificates of having received certain specified hospital instruction must also be presented. Re-examination in referred subjects cannot take place within three months of the date of rejection. The fees for this examination amount to £31 10s. Candidates commencing their studies after July 31, 1931, are required to pass in all the subjects of Section II of the Final examination within a period of twenty-five months.

Special regulations are provided for cases in which students have passed examinations in certain subjects elsewhere. Synopses of the examination can be obtained from Mr. H. H. Rew, Secretary of the Examining Board, 8-11 Queen Square, London, W.C.1.

## SCOTTISH TRIPLE QUALIFICATION

The Royal Colleges of Physicians and Surgeons of Edinburgh, with the Royal Faculty of Physicians and Surgeons, Glasgow, grant three diplomas ("Triple Qual.") jointly entitling the holder to registration as a general medical practitioner. The four examinations are held in Edinburgh, Glasgow, or both cities. The course of study must occupy not less than five years,

and the examination fees amount to £30. Full particulars may be obtained from the Registrar, 49 George Square, Edinburgh, or the Registrar, 242 St. Vincent Street, Glasgow.

## IRISH QUALIFICATION

Particulars of the examination of the Irish Conjoint Board for the licences in medicine, surgery and midwifery may be obtained on application to Mr. Alfred Miller, Royal College of Surgeons, St. Stephen's Green, Dublin. Examination fees for the three examinations amount to £42, and the Final examination cannot be taken within three academic years of passing the First examination.

## LONDON SOCIETY OF APOTHECARIES' DIPLOMA

The Society of Apothecaries of London grants a diploma (L.M.S.S.A.) in medicine, surgery and midwifery. The Final examination is held monthly, except in September, and comprises:—(a) Principles and practice of surgery, including surgical pathology, surgical anatomy, operative manipulation, instruments and appliances. (b) Principles and practice of medicine, including therapeutics, pharmacology, pathology, bacteriology and morbid histology. (c) Midwifery, gynaecology, diseases of new-born children and the use of obstetric instruments. (d) Forensic medicine, hygiene, mental diseases, and the theory and practice of vaccination. The examination is partly written, partly practical, partly clinical and partly oral. The minimum period of medical study extends over five years (fifty-seven months). The course of study includes attendance on the surgical and medical practice at a hospital connected with a medical school for a period of three winter and three summer sessions. The fee for the Pre-Medical examination is £5 5s., and for the Licence £21, which may be paid in two instalments. Application may be made to the Registrar, Society of Apothecaries of London, Water Lane, E.C.4.

## DUBLIN APOTHECARIES' DIPLOMA

The Apothecaries' Hall of Ireland grants a diploma (L.A.H.) to candidates who pass the requisite examinations. There are two examinations, with a fee of £21 for each, and a diploma fee of £5 5s. Particulars may be obtained from the Registrar of the Apothecaries' Hall, 95 Merrion Square.

## Medical Schools

The following are the principal medical schools in the United Kingdom:—

### LONDON

The following medical schools are constituents of the London University:—

*Charing Cross Hospital Medical School*, Chandos Street, W.C.2.—Prepares students for all the degrees in medicine and surgery of the University of London, for the diplomas of the Conjoint Board and of other licensing bodies. The Hospital has 300 beds, and includes complete departments for all the special branches of the curriculum. The School contains a large and well-equipped library, a Pathological Museum in which nearly 4,000 specimens are exhibited, with a special section devoted to the "Lockyer Collection." Prizes to the value of about £100 are awarded every year, and there are several scholarships. Fees: Entrance: (a) for the whole course, including Primary and Intermediate, £16 16s.; (b) for Clinical Studies only, £10 10s. Annual fee, £39 18s. Dean, Mr. Eric A. Crook, M.Ch., F.R.C.S.; Secretary, Mr. Wyndham Edwards.

*Guy's Hospital Medical School*, London Bridge, S.E.1.—The fees for a five-years' course amount to approximately £245. Several scholarships are obtainable by students, and a residential college (facing the hospital) is open. Communications should be addressed to the Dean of the School.

*King's College, Faculty of Medical Science*, Strand, W.C.2.—Students are prepared for the first two medical



## Educational Information

examinations of the University of London or other universities, or the first two of the Conjoint Board. Fees: First M.B. or Pre-medical course, £36 15s. per annum; courses for second examination, £42 per annum. Scholarships and prizes exceeding £600 in value are awarded annually. Dean of the Faculty, Professor R. J. S. McDowell, D.Sc., M.B.

*King's College Hospital Medical School, Denmark Hill, S.E.5.*—Composition-fee for the University of London course or the Conjoint Board course, £210; this fee includes three years' tuition at King's College and three years at the Hospital. Scholarships of a total value of £1,500 are offered annually. Dean, Dr. John A. Drake. The calendar may be obtained on application to the Secretary, Mr. S. C. Ranner, M.A.

*London Hospital Medical College, Turner Street, E.I.*—Entrance fee, £21; annual fee, £42. Scholarships open to competition, and numerous prizes in various subjects. Dean, Professor W. Wright, D.Sc., M.B.; Secretary, Mr. E. J. Burdon.

*London (Royal Free Hospital) School of Medicine for Women, Hunter Street, W.C.1.*—The fee is £50 per annum throughout the course of study—M.B., B.S., or the Conjoint Board qualification. Dean, Miss Elizabeth Bolton, M.D., M.S. A list of scholarships (total annual value, £1,950) and other particulars may be obtained from the Warden and Secretary.

*Middlesex Hospital, Union Street, W.1.*—The school, which includes the Bland-Sutton Institute of Pathology, the Courtauld Institute of Biochemistry, the Ferens Institute of Otology and the Barnato-Joel Research Laboratories, is fully equipped for teaching the entire medical curriculum; special courses are given in the higher degrees and diplomas, particularly the Primary F.R.C.S.Eng. and the Cambridge diploma in radiology. Special attention is given to the co-ordination of the work in the laboratories with that in the wards. Entrance-fee, £25; five annual instalments of £45; thereafter at the rate of £23 per annum until qualified. Two entrance-scholarships, value £100 each, and two university scholarships, value £90 and £60 respectively, are awarded annually. Other scholarships and prizes to the total value of £1,000 are also awarded each year. A prospectus may be obtained, on application, from the Secretary of the School, Mr. R. A. Foley. Dean, Dr. Izod Bennett.

*St. Bartholomew's Hospital Medical College, Smithfield, E.C.1.*—Composition-fee, £231 (or five annual instalments of £50 8s. each). The total value of the scholarships and prizes awarded annually is over £1,500. Dean, Mr. W. Girling Ball.

*St. George's Hospital, Hyde Park Corner, S.W.1.*—Composition-fee (first year), £36 15s.; (second to fifth years), £42 each. Courses in preliminary and intermediate subjects are taken at King's College or University College. There are several scholarships, exhibitions and prizes. Dean, Dr. A. Feiling.

*St. Mary's Hospital Medical School, Cambridge Place, W.2.*—Composition-fee for the curriculum (time limit six years), £205—if paid in four instalments, £215. Entrance-scholarships, together with several studentships and prizes, are awarded annually. Dean, Dr. C. M. Wilson; Secretary, Mr. B. E. Matthews, B.A.

*St. Thomas's Hospital Medical School, Albert Embankment, S.E.1.*—There are five entrance-scholarships; other prizes are open for competition. Annual fee, £50. Secretary, Dr. R. J. C. Thompson.

*University College Hospital Medical School, University Street, W.C.1.*—The composition-fee for the final degree or Conjoint Board examination course amounts to £123 7s. 6d. Several scholarships and exhibitions are offered by competition. Dean, Dr. A. M. H. Gray; Secretary, Mr. Richard Sloley.

*Westminster Hospital Medical School, 12 Caxton Street, S.W.1.*—Entrance-fee, £10 10s.; annual composition-fee (payable in advance), £42. Scholarships and prizes are awarded. Preliminary and intermediate studies are taken at King's College. Dean, Sir Stanley Woodwork; Secretary, Mr. H. Cyril Eddowes.

### OUTSIDE LONDON

*ABERDEEN.*—*University Faculty of Medicine.*—The total cost of obtaining the M.B., Ch.B. degrees is estimated at £240, including hospital fees, class fees, and degree fees. Clinical study is available at the Royal Infirmary and other local institutions. Applicants should communicate with the Secretary.

*BELFAST.*—*Queen's University of Belfast.*—Students are prepared, during a five-years' course, for the degrees of M.B., B.Ch., and B.A.O. The combined class and laboratory fee for four years is £105, payable in four instalments.

*BIRMINGHAM.*—*University Faculty of Medicine.*—The minimum cost of obtaining the double degree is estimated at £271. Full information is obtainable at the Dean's Office, Medical Buildings, Edmund Street.

*BRISTOL.*—*University Faculty of Medicine.*—The approximate cost of obtaining the conjoint degrees is £215, payable by six annual instalments. The Faculty also prepares students for the diploma examinations of other licensing bodies.

*CAMBRIDGE.*—Clinical lectures and practical instruction are given to members of the University at Addenbrooke's Hospital.

*CARDIFF.*—*The Welsh National School of Medicine* is a constituent school of the University of Wales. Composition-fees for six years amount to about £290. Application for particulars may be made by letter to the Provost or Secretary.

*CORK.*—*University College* is a constituent college of the National University of Ireland. The calendar (price 6d.) is obtainable from the Secretary.

*DUBLIN.*—*Royal College of Surgeons' Schools of Surgery* are attached to the Royal College of Surgeons. The cost of obtaining the conjoint diplomas is estimated at £184 17s. A syllabus may be obtained from Mr. Alfred Miller, Registrar, Royal College of Surgeons.

*School of Physic, Trinity College.*—The cost of qualifying amounts to £146 3s. Registrar, Mr. G. L. Allen.

*University College.*—A constituent college of the National University of Ireland.

*EDINBURGH.*—*University Faculty of Medicine.*—The minimum cost of qualification is estimated at £264.

*School of Medicine of the Royal Colleges.*—The courses of study are suited to University and other qualifications. The minimum cost of education for the triple qualification, including examination fees, is about £180, payable by instalments. Scholarships and bursaries are available.

*GALWAY.*—*University College.*—A constituent college of the National University of Ireland.

*GLASGOW.*—*The University Faculty of Medicine.*—The division of studies is similar to that adopted at Edinburgh, and the fees are about equal.

*The Anderson College of Medicine, Dumbarton Road, W.*—Students are prepared for University and other qualifications.

*St. Mungo's College, 86 Castle Street.*—The total fees payable for preparation for a Scottish or English qualification amount to rather more than £100.

*LEEDS.*—*University Faculty of Medicine.*—The total cost of education for the M.B. degree is estimated at £370. Registrar of the University, Mr. A. E. Wheeler, M.A.

*LIVERPOOL.*—*University Faculty of Medicine.*—The composition and other fees are estimated at £347.

*MANCHESTER.*—*University Faculty of Medicine.*—The fees for the training and examination for the M.B., Ch.B. degrees are estimated at £294 7s. Courses are also available for other degrees and diplomas. Particulars will be found in the calendar of the University, or may be obtained (price 3d.) on application from the Registrar.

*NEWCASTLE-UPON-TYNE.*—*University of Durham College of Medicine, Northumberland Road.*—The composition-fee for a complete course of lectures and laboratory work at the College is £132, payable in advance. For particulars apply to the Dean.



## Educational Information

**ST. ANDREWS.**—*University Faculty of Medicine.*—The inclusive fee for five-years' University and clinical courses for the M.B., Ch.B. degrees is £182, payable in five annual instalments. Advisers of Studies, Professor J. Charteris, M.D., Dundee, and Professor D. Waterston, M.D.

**SHEFFIELD.**—*University Faculty of Medicine.*—A five-and-a-half years' course is provided for. The composition-fee is estimated at £238, payable in six instalments. Students from outside the British Empire are charged an additional 20 per cent. on all fees.

**SWANSEA.**—*University College.*—A constituent college of the University of Wales. Registrar, Mr. Edwin Drew.

### Dentistry

From a statistical point of view it is fairly evident that the average annual number of entrants to the dental profession is insufficient to equal the loss of registered dentists through death or retirement. So clearly is this deficiency realised by the Dental Board of the United Kingdom, the body responsible in the first instance for the administration of the relevant Acts, that the Board has of late years subsidised dental schools and selected candidates on a liberal scale. There is at present ample room for addition to the ranks of dental surgeons, and this state of things seems likely to continue. In addition, the range of openings for recently qualified dental practitioners is wider than formerly, largely on account of the increasing importance attached to research.

#### Dental Training

The registration of dental students is subject to the following conditions: The candidate must (1) be not less than seventeen years of age, (2) have passed a recognised Preliminary examination (see "Preliminary Examination" under "Medicine") and a Pre-Medical examination, and (3) have commenced professional study, by pupilage or otherwise. Candidates for a diploma in dental surgery should produce certificates of having been engaged during four years in professional study, and of having received two years' instruction in mechanical dentistry. (A syllabus for students in dental mechanics is issued by the British Dental Association, 23 Russell Square, London, W.C.1.) No portion of practical instruction which is taken prior to the date of registration may be reckoned as a portion of the four years of professional study. It is recommended that instruction in dental mechanics be taken at a recognised dental hospital and school. If any part of such instruction is taken by the candidate as a pupil with a registered dentist, the time required to be devoted to it shall be at least twice the time required for the corresponding instruction taken at a dental school. Application for registration should be made on the appropriate form to the Registrar of the General Medical Council, 44 Hallam Street, London, W.1. No fee is charged for registration as a student. Examination for a degree or licence in dentistry or dental surgery includes the following subjects:—

(1) *Chemistry, Physics, and Biology*, in their bearing on medicine and dentistry; (2) *Human Anatomy and Physiology*; (3) *General Pathology*, including bacteriology; (4), *Medicine and Surgery*; (5) *Dental Anatomy and Physiology*, *Dental Pathology*, *Dental Surgery* (including orthodontics), *Dental Materia Medica and Therapeutics*, and *Dental Mechanics and Dental Metallurgy*; (6) *Practical Dental Surgery* (7) *Practical Dental Mechanics and Metallurgy*; (8) *Anæsthetics*, general and local, employed in dental practice.

Women are not admitted, at present, as students to certain of the dental schools and general hospitals. The L.D.S. of the Royal College of Surgeons of England is usually more valued than a similar qualification

obtained elsewhere. The curriculum of the College (the Preliminary and Pre-registration examinations having been passed) is as follows:—

The *First Examination* consists of (1) dental mechanics and dental metallurgy; (2) (a) general anatomy and physiology; (3) special anatomy and physiology of the teeth and associated parts. The examination is held three times a year. Candidates may present themselves for the three parts of the First examination together or separately, but before admission to any part of the examination they must produce evidence of having passed the required Preliminary and Pre-medical examinations.

The *Second Examination* consists of medicine, general pathology, and bacteriology. Candidates must be certified as having attended studies at a recognised institution for two terms.

The *Final Examination* comprises (1) general surgery (including surgical pathology); (2) dental surgery and pathology, and practical dental surgery. Candidates must have been engaged in recognised professional study for four years after passing Part I of the Pre-medical examination, and must have attended certain courses of instruction.

The fees for the licence in dental surgery amount to £21, payable by instalments. Inquiries should be addressed to the Director of Examinations, Examination Hall, Queen Square, London, W.C.1. Similar conditions apply to the qualifications of the following colleges:—

**ROYAL COLLEGE OF SURGEONS, EDINBURGH.**—The course of study must occupy at least four years, and not less than three years must be spent at a recognised school. The subjects are taken in three examinations. The examination fees amount to £18 18s. Information may be obtained from Mr. D. Thomson, Clerk to the College, 49 George Square.

**ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.**—The general regulations are similar to those obtaining at Edinburgh. Candidates for the licence must be twenty-one years of age. The fees, including that for the Registration examination, amount to £19 19s. Particulars are obtainable from Mr. W. Hurst, Secretary of the Faculty, 242 St. Vincent Street.

**ROYAL COLLEGE OF SURGEONS IN IRELAND.** St. Stephen's Green, Dublin. There are three examinations, with fees amounting (including diploma fee) to £21. The Registrar will furnish particulars on application.

#### University Degrees and Diplomas

**BELFAST.**—Five years' study is compulsory for students for the degree of B.D.S., and four years for candidates for the licence diploma. Examination and degree fees amount to £19 19s.; examination and diploma fees to £14 14s. Regulations and other information may be obtained from the Secretary, Queen's University.

**BIRMINGHAM.**—The course for the diploma (L.D.S.) occupies four years. The B.D.S. degree cannot be conferred until twelve months after the diploma (or that of an approved body) has been obtained.

**BRISTOL.**—The curriculum for the degree and for the diploma extends over four years after passing the Preliminary Science examination. There are four examinations for the degree and four for the diploma. Secretary and Registrar, Miss Winifred Shapland.

**DUBLIN.**—Four and a half years must be spent in study for the degree of bachelor in dental science, and the B.A. degree is prerequisite. The arts and dental courses may be taken separately or concurrently. Details may be obtained from the Registrar of the School of Physic, Trinity College, Dublin. (See also "Ireland.")

**DURHAM.**—The University grants a licence and two degrees in dental surgery. The diploma course occupies four years, and the primary degree course five years. Fees for examinations and licence, £15 10s. Fees for four examinations and B.D.S. degree, £29 16s. Particulars may be obtained on application to the Dean of the College, University of Durham College of Medicine, Newcastle-upon-Tyne.

## Educational Information

**IRELAND.**—The course of study for the B.D.S. degree of the National University of Ireland extends over four years, and there are four examinations. Constituent colleges, Dublin and Cork. (See also "Dublin.")

**LEEDS.**—There are three examinations, in addition to a prescribed course of study extending over five years for the degree and four years for the diploma. The matriculation, examination and degree fees together amount to £25 (diploma fees, £24). Dental Warden, Professor T. Talmage Read, Registrar of the University, Mr. A. E. Wheeler, M.A.

**LIVERPOOL.**—There are four examinations for the degree of B.D.S. or for the licence in dental surgery (L.D.S.). Four years' study is required for the licence and five and a half years for the degree. Dean of the Medical Faculty, Professor W. J. Dilling.

**LONDON.**—The degree of B.D.S. is conferred after matriculation and three subsequent examinations, the second of which is taken in two parts. The curriculum extends over five years, and the examination fees amount to £27 6s. Several schools and hospitals in London and the provinces are recognised for training purposes. For particulars apply to the External Registrar (if an external student; otherwise to the Academic Registrar), University of London, South Kensington, S.W.7.

**MANCHESTER.**—The examination fees for the B.D.S. (four examinations), together with the conferment fee, amount to £28 7s. The curriculum extends over five and a half years. The diploma course covers four years, with examination and conferment fees amounting to £23 2s. Inquiries regarding examinations should be addressed to the Registrar of the University.

**ST. ANDREW'S.**—The University grants a diploma in dental surgery (L.D.S.), after four years' study and four examinations. There is also obtainable a diploma in public dentistry, the first of its kind. To Dr. Graham Campbell, Adviser of Studies, Dental Hospital, Park Place, Dundee.

**SHEFFIELD.**—Five-and-a-half years' study is required for the degree and four years' for the diploma. There are three examinations for each. Registrar of the University, Mr. W. M. Gibbons, M.A.

### Dental Instruction

The following are the chief schools in the United Kingdom for instruction in the science and practice of dentistry:—

#### LONDON

**Guy's Hospital Dental School**, London Bridge, S.E.1.—Practical training is provided in the hospital. The cost of a five-years' course for the B.D.S. degree of London University is £339 8s. Cost of L.D.S. training (four years), £280. The course can be extended so as to include medical studentship. The cost of the combined medical and dental course is approximately £440. Particulars may be obtained from Professor T. B. Johnston, M.B., Dean of the School.

**King's College Hospital Dental School**, Denmark Hill, S.E.5.—Professional instruction is given in association with King's College. Dental students may also attend other departments bearing on their work—e.g., those devoted to diseases of the throat. A London degree course costs £274, and a diploma course £256.

Dean, Dr. John A. Drake; Secretary of the School, Mr. S. C. Ranner, M.A.

**London Hospital Dental School**, Turner Street, E.1.—Full course (including dental mechanics) for L.D.S. diploma, £240. Inquiries should be addressed to the Dean (Professor W. Wright, M.B.).

**London (Royal Free Hospital) School of Medicine for Women**, Hunter Street, W.C.1.—Courses of study arranged for the B.D.S. of London University and the L.D.S. of the Royal College of Surgeons. Dean, Miss Elizabeth Bolton, M.D., B.S.; Warden and Secretary, Miss L. M. Brooks.

**Royal Dental Hospital of London School of Dental Surgery**, Leicester Square, W.C.2.—The cost of the full course, including the fee at a general hospital and examination fees for the L.D.S. diploma, is estimated at £299. School fees for the London B.D.S. degree amount to £335 19s. Particulars of several scholarships are given in the calendar of the school. Dean, Mr. H. Stobie.

**St. Mary's Hospital**, Paddington, W.2.—A composition-fee of £73 10s. is charged for a two-years' course of the medical subjects required for the L.D.S. if paid on entry. Dean of the Medical School, Dr. C. M. Wilson; Secretary, Mr. B. E. Matthews, B.A.

**University College Hospital Dental School**, Great Portland Street, W.1.—Composition-fees: L.D.S. four-years' dental course, payable by four instalments, £246; six-years' course, comprising dental curriculum and curriculum for the M.R.C.S., L.R.C.P. diplomas, £416, payable by six instalments. The School is recognised by the University of London. Students are prepared for the University's B.D.S. degree, for which special arrangements as to studies and fees are made. Inquiries should be addressed to the Sub-Dean, Mr. J. L. Dudley Buxton, L.M.S.S.A., L.D.S.

**Westminster Hospital**, 12 Caxton Street, S.W.1.—Fee for general surgical practice and lectures for the R.C.S. dental diploma (payable in advance), £70 (or two payments of £36 each). Dean of the Medical School, Dr. Sir Stanley Woodwork.

#### OUTSIDE LONDON

**BELFAST.**—*Queen's University Faculty of Medicine.*—The combined class and laboratory fee is £23 12s. 6d. for the first year and £26 5s. for the second year. Entrance-forms and other information may be obtained by applying to the Secretary.

**BIRMINGHAM.**—*University School of Dentistry.*—The courses of instruction qualify also for the diplomas in dental surgery of all licensing bodies.

**BRISTOL.**—*University Faculty of Medicine (Dental Surgery).*—The inclusive cost of the curriculum is estimated at £273 in the case of the degree, and £250 for diploma students. Communications should be addressed to the Registrar of the University.

**DUBLIN.**—*School of Dental Science, Trinity College.*—The total cost of obtaining the B.Dent.Sc. degree is given in the regulations as £331 15s. 6d., including arts and dental courses and examination and degree fees. For details apply to the Registrar of the School of Physic.

**Royal College of Surgeons Schools.**—The College grants a diploma in dental surgery. Cost of tuition,

## Educational Information

£211; examination fees, £21. Registrar, Mr. Alfred Miller.

DUNDEE.—*University of St. Andrews Dental School*, Park Place. Composition fees amount to £176 14s. The associated Dental Hospital has been reconstructed and enlarged. Adviser of Studies, Dr. Graham Campbell.

EDINBURGH.—*School of Medicine of the Royal Colleges*.—Communications should be addressed to Dr. John Orr, Dean of the School, Surgeons' Hall, Edinburgh.

*Incorporated Dental Hospital and School*, 31 Chambers Street.—General hospital attendance and clinical instruction are taken at the Royal Infirmary. The tuition and R.C.S. Edin. diploma fees amount to £133 8s. If the "triple qualification" (see "Medicine") is taken concurrently, the minimum cost is £212 16s. Dean of the School, Mr. W. Guy, F.R.C.S., L.D.S.; Secretary, Mr. G. M. Stuart, W.S., 20 York Place.

GLASGOW.—*Incorporated Dental Hospital and School*, 211 Renfrew Street, C.3. Estimated cost of curriculum and licence examinations, £245, plus £29 for instruments. The new Hospital is now open. Communications regarding the School should be addressed to the Dean at the Hospital.

LEEDS.—*Dental Department of the University*.—The cost of education for the degree of the University is given in the University Calendar as £405 (£366 for the diploma). Registrar of the University, Mr. A. E. Wheeler, M.A.

LIVERPOOL.—*University School of Dental Surgery*.—Candidates are prepared for the licence (L.D.S. Liverpool), the degree of B.D.S., and the higher degree of M.D.S. School fees for the B.D.S. (five years' training) amount to £250; those for the L.D.S. (four years' course) to £198. Director of Dental Education, Professor W. H. Gilmour, M.D.S.

MANCHESTER.—*Dental Department of the University*.—Students are prepared for the B.D.S. of the University, the diploma of the University, or that of the R.C.S. Eng. and other licensing bodies. Before registration shall be considered as complete every student entering on a degree course in the Faculty of Medicine will be required to produce to the Dean of the Medical School his Matriculation certificate or certificate of exemption. In the case of a certificate of exemption, the certificate of the examination on which exemption was granted must be produced. The Dean of the Medical School of the University answers inquiries concerning classes.

*Dental Hospital of Manchester, Oxford Road, The University, and Manchester Royal Infirmary*.—The total fees payable to the University, the Hospital, and the Infirmary for courses of study, examinations, the library, etc., and the conferment of the degree or diploma are approximately as follows.—For the B.D.S. Manch., £312; for the L.D.S. Manch., £241 10s.; for the L.D.S., R.C.S. Eng., £253. The total fees for women are in each case £1 11s. 6d. less. The required outfit in each case (tools, instruments and books) costs about £60 in addition. Dean of the Dental Hospital, Mr. J. H. Mathews, L.D.S.

NEWCASTLE-UPON-TYNE.—*University of Durham College of Medicine (Dental Department)*.—Composition fees (including mechanical pupilage) for the degree amount to about £236, for the diploma to about £221. For particulars apply to the Dean of the College.

ST. ANDREW'S.—(See "Dundee.")

SHEFFIELD.—*Dental Department, University Faculty of Medicine*.—Students are prepared for the degree (composition fees, £250, payable by instalments) or the diploma (composition fees, £220, payable by instalments) of the University. Students from outside the British Empire are charged an additional 20 per cent. on all fees. Registrar, Mr. W. M. Gibbons, M.A.

## Science

Pharmacists intending to adopt a scientific career find it necessary to take a degree in science as a first step. Particulars of such degrees are given in succeeding paragraphs; but one or two general considerations are appropriate before these are read. The most important matter, if loss of time is to be avoided, is the decision whether the vocation is to be academic or industrial. In the majority of cases the remuneration is greater in the industrial sphere: against this factor has to be set the chances of the work being less congenial than that of research or other purely professional tasks. The present-day works chemist is an indispensable member of the staff of every important manufacturing house; and, especially if he is gifted with engineering capability, his position is an important one. The field of applied research is wide and fruitful. Many technical appointments in wholesale druggists' and hospital dispensaries are held by persons possessing pharmaceutical qualifications with B.Sc., or F.I.C., qualifications, or both, in addition. While many students take university degrees after full-time courses it is possible to obtain certain qualifications externally, thus utilising spare time to the greatest possible advantage. Scholarships carrying free instruction and maintenance allowance are awarded annually as a result of science examinations held by the Board of Education. The Salters' Institute awards grants in aid to employees (over seventeen years old) in chemical works in or near London who desire to extend their education in chemical industry. Fellowships in research are offered annually. Applications for grants and fellowships should be sent in early in June to the Director, Salters' Institute of Industrial Chemistry, St. Swithin's Lane, London, E.C.4.

### Science Degrees

The regulations for a degree in science of London University require the student to pass three examinations, viz.: (1) The Matriculation, (2) the Intermediate examination in science, and (3) the Final examination. Regulations are published for (a) internal students who register as such, and follow approved courses of instruction, and (b) external students who are examined without complying with a curriculum.

For particulars of Matriculation, Special University Entrance examination and External examinations apply to the External Registrar, University of London, South Kensington, S.W.7. Regulations for internal students are to be obtained from the Academic Registrar. The statutes of the University require all external students to register.

The Intermediate examination in science commences on the first Monday in July. An additional Intermediate examination is held, in London, in the more usual subjects only, commencing on the fourth Monday of November. A candidate must have passed the Matriculation examination not later than the preceding January or June, respectively, or otherwise have fulfilled the conditions of exemption. Candidates are required to pass in any four subjects selected by themselves out of the following: (1) Pure mathematics; (2) applied mathematics; (3) physics; (4) chemistry; (5) botany; (6) zoology; (7) geology; (8) the general principles of biology; (9) general physiology; (10) military studies; and (11) geography. At least one of the four subjects selected must be taken from among the first three. The fee is £6 6s.

The Final examination for B.Sc. takes place once a year, commencing on the third Monday prior to the first Monday in July. The B.Sc. degree is obtainable by passing the B.Sc. degree (general) examination in three subjects, or taking the B.Sc. degree (special), an examination of a specialised nature in a principal subject and a subsidiary subject. Successful candidates will be awarded First-class Honours, Second-class



## Educational Information

Honours, or a Pass Degree. An additional general examination is also held, commencing on the first Monday in November in the more ordinary subjects. Candidates must have passed the Intermediate at least a year previously, and the Matriculation at least three years previously. The fee is £6 6s. There are fifteen prescribed subjects to select from. The degrees Master of Science (M.Sc.), Doctor of Philosophy (Ph.D.), and Doctor of Science (D.Sc.) are also granted.

The English provincial, Irish, Scottish and Welsh universities confer the B.Sc. degree (*cum curriculo*), usually three years after matriculation, with examinations at the end of each session.

### Diplomas in Chemistry

The Institute of Chemistry of Great Britain and Ireland conducts examinations for the associateship of the Institute (A.I.C.). A certificate in Branch E (analysis of food and drugs, and water, etc.) is nowadays a necessity to obtain an appointment as a public analyst, and this branch is attractive to would-be pharmacist associates. The Regulations for the admission of students, associates and fellows are obtainable from the Registrar of the Institute, 30 Russell Square, London, W.C.1.

**STUDENTSHIP.** — Candidates should register at the Institute (see above) as students at the commencement of their training. They must be British subjects, not less than sixteen years of age, and have passed an approved preliminary examination, and at the time of application be recommended by a teacher of chemistry at a recognised institution, or a Fellow of the Institute. Annual registration, £0.5s.

**ASSOCIATESHIP.** — The Examination for Associateship (A.I.C.) consists of general theoretical chemistry (three papers) and practical chemistry, and occupies six days. Fee, £5 5s. It is open to: (i) Candidates who have completed four years' systematic day course of study in prescribed subjects at an institution approved by the Council; (ii) candidates who in lieu of first year above under (i) have taken two years' full-time study at a secondary school recognised by the Board of Education or had two years' experience in the laboratory of a Fellow of the Institute; (iii) candidates who in lieu of a fourth year have had one year's satisfactory experience under a Fellow or in an approved laboratory or works; (iv) candidates who have obtained a degree, including chemistry in the final examination, and have taken a further year's training in chemistry at a university or college or have had two other years' approved experience under a Fellow of the Institute or in an approved laboratory or works. (v) Applications from candidates (over 25 and with at least eight years in practice) who do not comply with the above requirements are also considered. (vi) Applications from candidates (over 30 who have been engaged in the study and practice of chemistry for at least twelve years and attained a responsible position) who do not comply with the above requirements are also considered. The synopsis of the examination for the associateship is as follows:—

(a) **General Theoretical Chemistry.** — Candidates are required to show a thorough acquaintance with the fundamental laws and theories of chemistry, together with the properties and the methods of preparation of the elements

and their compounds, both inorganic and organic, and with the application of chemistry in the arts and industries. Three papers, any of which may contain questions in inorganic, organic and physical chemistry, will be set.

(b) **Practical Chemistry.** — Exercises in qualitative analysis and quantitative analysis (both gravimetric and volumetric), including the analysis of alloys, ores and minerals, and the determination of substances present in minute quantities, as impurities or otherwise, in commercial products. Preparation and purification of well-defined chemical substances. Organic analysis, including the recognition and determination of the elements and of typical groups and radicles, the identification of organic compounds. Gas analysis. The determination of physical constants and the use of physical instruments employed by chemists.

Candidates are required to satisfy the examiners as to their ability to translate technical literature from French and German into English with the aid of dictionaries.

Admission to the associateship without further examination may be granted to candidates who have obtained certain university degrees with first or second class honours in chemistry, or other diplomas recognised by the Council, with certain limitations as to courses of instruction and training.

**FELLOWSHIP.** — Admission to the Fellowship is open by examination to associates of three years' standing, who are not less than twenty-four years of age. Only in exceptional circumstances will the Council of the Institute consider applications from Associates for election to the Fellowship without examination; and such an Associate will be required to produce satisfactory evidence that (i) he has carried out original research of sufficient merit; or (ii) he has devised processes or inventions of sufficient merit; or (iii) that having been engaged in important analytical, industrial, consulting or other work of a general or specialised character, he is, in the opinion of the Council, possessed of sufficient knowledge and ability.

The Fellowship examination is more specialised there being various branches for which the candidates may enter. These are: (A) inorganic chemistry; (B) physical chemistry; (C) organic chemistry; (D) biochemistry; (E) the chemistry (including microscopy) of food and drugs and water; (F) agricultural chemistry; (G) industrial chemistry.

### Science Schools

Courses of science instruction are available at the following institutions. These in general cover the subjects for London science degrees, courses for the National Certificates in Chemistry awarded by the Board of Education (as to which Rules No. 100, price 2d., is obtainable at the Stationery Office), and for the Institute of Chemistry examinations. The student should ascertain from the secretary of the institution whether the courses available cover the specific curricula for the examinations he intends to enter:—

**ABERDEEN.** — Robert Gordon's Technical College includes a well-equipped chemical department. Day classes, £6 per term. Evening classes, £1 10s. per session.

**ABERYSTWYTH.** — University College of Wales.—Three or four year courses for degree in science, £20 per session. Registration fee, £1 per annum.

**BANGOR.** — University College of North Wales.—Composition fees for a science student amount to £24 1s. per session, including registration and apparatus fees.

SCIENCE QUALIFICATIONS	
(IN BRIEF)	
<b>LONDON B.Sc. DEGREE</b>	
1. Pass Matriculation.	
2. Intermediate Examination in Four Science Subjects. Fee £6 6s.	
3. Final Examination taken at least one year afterwards, and at least three years after Matriculation. Fee £6 6s.	
<b>A.I.C. and F.I.C. DIPLOMAS</b>	
1. Pass approved Preliminary Examination and register as Student while training. Annual Fee 10s.	
2. After 4 years' day training, Examination for Associateship. Fee £5 5s.	
3. After a further three years an Examination for Fellowship in a specified branch. Entrance fee £5 5s.	

# Educational Information

**BARNESLEY.**—Day courses for B.Sc. of Sheffield University, and in fuel and glass technology.

**BARROW-IN-FURNESS.**—*Technical College.*—Day and evening classes in chemistry, botany and physics; fees per session, day classes, £3 3s.

**BELFAST.**—*Queen's University.*—Complete course of applied science and technology; £65 3s.

**BIRMINGHAM.**—*University.*—Courses in pure science. *Central Technical College, Suffolk Street.*—Evening classes in chemistry, botany and physics. *Aston Technical College.*—Day and evening courses in chemistry and physics; sessional fees, day £1 to £4, evening 10s. 6d.

**BLACKBURN.**—*Municipal Technical School.*—Day and evening classes are available in chemistry, physics and botany.

**BOLTON.**—*Municipal Technical College.*—Evening courses in chemistry; fees, 5s. to 10s. per session.

**BOURNEMOUTH.**—*Municipal College.*—Science courses for B.Sc. London degrees, £17 17s. per session (three terms, day classes). Evening classes in science and technology, 12s. 6d. to £1 per session of two terms.

**BRADFORD.**—*Technical College.*—Day and evening courses for University of London degree examinations.

**BRIGHTON.**—*Municipal Technical College.*—Day courses for University of London examinations, including the B.Pharm. degree.

**BRISTOL.**—*University.*—Degree courses for B.Sc.; fee, £31 10s. M.Sc., Ph.D. and D.Sc.

**BURNLEY.**—Day and evening classes are held at the Municipal College in chemistry, physics and botany; fees, £1 1s. to £2 12s. 6d. per course (part-time).

**BURY.**—Evening chemistry courses (extending over three years) cost 10s. to 15s. per session.

**CAMBRIDGE.**—*University.*—For particulars apply to the Registry.

**CARDIFF.**—*University College of South Wales and Monmouth and Technical College.*

**CORK.**—*University College.*—A constituent college of the National University of Ireland. Courses for B.Sc. degree.

**DARLINGTON.**—*Technical College.*—Evening courses in chemistry, physics and botany; 15s. to 25s.

**DUNDEE.**—*University College.*—Day classes in botany, chemistry and physics. *Technical College.*—Central institution for eastern counties of Scotland for technical instruction.

**EDINBURGH.**—*University.*—Degree courses for B.Sc. *Heriot-Watt College, Chambers Street.*—Day courses extending over four years for the B.Sc. degree in technical chemistry, University of Edinburgh, and the B.Sc. degree in chemistry, University of London; also for the diploma of the College in applied chemistry and the associateship of the Instituto de Chemistry. Courses for the examinations of the Pharmaceutical Society. Fees from £20 to £31 10s. Evening classes are also held from the end of September to March in organic and inorganic chemistry, applied chemistry and pharmaceutics.

**EXETER.**—*University College.*—Degree course in science. Preliminary scientific examination of the Pharmaceutical Society.

**GALWAY.**—*University College.*—A constituent college of the National University of Ireland. Fees, for courses leading to the B.Sc. degree, £2 per session.

**GLASGOW.**—Degree courses in science.

**HALIFAX.**—*Municipal Technical College.*—Day courses in chemistry, physics and dyeing, £15 per session; evening classes, 13s. 6d. per subject.

**HUDDERSFIELD.**—*Technical College.*—Full-day and evening courses in chemistry, physics, botany and technological subjects, including manufacture of dyes. Courses for Institute of Chemistry's examinations. Sessional fees: Day, £12s 12s. to £21; evening from 10s. 6d., according to requirements.

**HULL.**—*Municipal Technical College, Park Street.*—Day, B.Sc. (Lond.) course, £2 2s. to £10 per term; day and evening courses for pharmacists and dispensers, £1 1s. per term. Special courses in agriculture, *materia medica*, oil extraction, paint and varnish manufacture.

**LANCASTER.**—*The Storey Institute Technical College.*—Evening or day classes in matriculation and applied science; fees, 6s. 6d. to 17s. 6d. per session.

**LEEDS.**—*University.*—Degree courses in science; composition fee, £42. *Technical College.*—Courses for science degrees, College diploma and National certificates.

**LIVERPOOL.**—Degree courses in science.

**SOUTHAMPTON.**—*University College.*—B.Sc. course composition-fee, £32 per session. Evening classes in science subjects, £1 to £5 per course.

## LONDON

**Imperial College of Science and Technology.** South Kensington, S.W.7.—This college includes as integral parts the Royal College of Science, the Royal School of Mines and the City and Guilds (Engineering) College. The pre-graduate courses of study lead up to an associateship and B.Sc. degree in biology, botany, chemistry, geology, mathematics, physics and zoology at the Royal College of Science; in mining, mining geology, metallurgy and oil technology at the Royal School of Mines; and in engineering (civil, electrical and mechanical) at the City and Guilds (Engineering) College. Candidates for admission to associateship and B.Sc. courses should have qualified for matriculation at the University of London, and they must satisfy College requirements as stated in the prospectuses. Post-graduate courses and research may be undertaken by qualified candidates in all the subjects stated, and many others which are detailed in the prospectuses. The post-graduate work may lead up to the diploma of membership of the Imperial College and to the M.Sc., Ph.D., or D.Sc. of the University of London. The fees are £62 10s. per session, except for research, which is £22 10s., and certain post-graduate courses, which are also £22 10s. per session. There are many fellowships, scholarships and prizes available for award. Any of the college prospectuses will be sent free on application to the Registrar, Imperial College, S.W.7.

**Battersea Polytechnic.** Battersea Park Road, S.W.11.—Degree courses for B.Sc. (University of London) and for A.I.C. The course for full-time day students extends over three years, and for evening students five years. Courses for F.I.C. (branch E.). Evening courses in chemical technology include food and drugs, bacteriology, oils, fats and petroleum technology and photography. Facilities are available for research work.

**Birkbeck College** (University of London), Bream's Buildings, Chancery Lane, E.C.4.—Complete evening courses for University of London science degrees and other examinations in science. Composition-fees for Intermediate or Final science examination, £5 per term, or £12 per session.

**Borough Polytechnic.** Borough Road, S.E.11—Courses on foodstuffs, bacteriology, oils, colours and varnishes, printing inks, synthetic resins and plastic moulding. Classes in chemistry are also held.

**Chelsea Polytechnic.** Manresa Road, Chelsea, S.W.3.—Day and evening courses in chemistry and botany leading to the B.Sc., M.Sc. and Ph.D. Degrees of London University and the A.I.C. (Institute of Chemistry). Special courses for F.I.C. (Food and Drugs). Classes in applied chemistry, hydrogen ion measurements, dyes and drugs, photomicrography, etc. Research in physical, organic and cellulose chemistry. Fees: day, £21 per session; evening, £1 to £3 per session (3 terms).

**East London College.** Mile End Road, E.1.—Classes in chemistry, mathematics, physics and botany.—Intermediate, Final and Honours B.Sc., and courses for the diplomas of the Institute of Chemistry. Fee, £22 10s. per annum.

**King's College.** Strand, W.C.2.—Courses are available in the Faculty of Natural Science for students preparing for B.Sc. degree and Institute of Chemistry examinations. Annual fees: Intermediate course, £36 15s.; Final course, £52 10s.

**Northern Polytechnic.** Holloway, N.7.—The composition fees for the Intermediate and Final B.Sc. courses are: Day, £18 per session; evening, £5 per session. Evening classes in chemistry, botany, physics and photography cost from 20s. to £3 per session.

**Royal Holloway College.** Englefield, Surrey.—For women students only, mainly residential. The college is a school of the University of London, and the degree courses include science.

**Sir John Cass Technical Institute.** Jewry Street, Aldgate, E.C.3.—Evening courses in chemistry, physics, mathematics, microbiology, brewing, malting, zoology, botany and vegetable physiology, metallurgy, mining, geology, and fuel and petroleum technology. Sessional fees (September to July): 20s. one evening per week, 35s. two evenings per week, plus 10s. for each additional evening per week.

**University College.** Gower Street, W.C.1.—Fees for B.Sc. (general or special) course for three sessions amount to £147. Facilities for post-graduate study: fee, £29 8s. for two sessions, and £22 1s. for one session. Reduced fees in the case of honours graduates who have taken their undergraduate course at the college.

**Wandsworth Technical Institute.** High Street, Wandsworth, S.W.18.—Day and evening classes in chemistry, physics and botany. Sessional fee for a recognised course, 30s. over twenty-one years of age; 15s. under twenty-one.



# Educational Information

**West Ham Municipal College**, Romford Road, E.15.—Evening classes for the Preliminary Scientific examination. Inclusive fee 14s. to 28s. Day and evening classes for B.Sc. (London). Fees: day, £9 to £18; evening, 14s. to 28s.

**MANCHESTER.—Victoria University.**—Courses for B.Sc. degree in science. Classes in bacteriology are held in the University in connection with the Department of Bacteriology and Preventive Medicine, York Place.

**College of Technology** also provides specialised instruction in applied chemistry leading to the Manchester University degrees of B.Sc. Tech., M.Sc. Tech., and Ph.D., and also to certificates in the Faculty of Technology.

**Tutorial College.**—Revision course in botany, chemistry and physics; composition fee for the three subjects, £10 10s.

**NEWCASTLE-UPON-TYNE.—Armstrong College (University of Durham).**—Tuition fees for degree course in pure science, £35 per annum. Registration fee, subscriptions to students' societies and examinations fee, £7 13s. 6d. per annum.

**NORWICH.—Technical College.**—Day classes are held in chemistry, physics and biology, and evening classes in botany, biology, chemistry and physics. Pharmaceutical chemistry, organic chemistry and Latin classes are available for students who have been successful in the Preliminary Scientific examination.

**OXFORD.—University.**—For particulars apply to the Registrar. **Technical School.**—Evening classes in chemistry.

**PLYMOUTH AND DEVONPORT.—Technical College.**—Day and evening courses of B.Sc. Lond. Sessional fees: Day, £15 to £20; part-time day classes or evening classes, £3 3s.

**PORTSMOUTH.—Municipal College.**—Instruction in science and technological subjects. Fees, £2 2s. to £8 8s. per term for full-time day courses; 7s. 6d. to 25s. per session for evening courses.

**READING.—University.**—B.Sc. course, £35 per session. Preliminary Scientific examination of the Pharmaceutical Society, £28 per session. Evening classes in physics, chemistry and botany.

**ROCHDALE.—Municipal Technical School.**—Evening classes in chemistry and botany.

**ST. ANDREWS.—University College.**—Inclusive fee for courses for B.Sc. degree in pure science, £94 10s.

**SALFORD.—Royal Technical College.**—Three years' full-time day course, for which a diploma, endorsed by the Board of Education, is awarded. Day diploma courses and evening courses in chemistry and physics are recognised by the Institute of Chemistry.

**SHEFFIELD.—University.**—Degree courses in science. The composition fee for a three-year course is £105, payable in three instalments. Non-British students are charged an additional 20 per cent.

**SOUTHAMPTON.—University College.**—B.Sc. course composition-fee, £32 per session. Evening classes in science subjects, £1 to £5 per course.

**SWANSEA.—University College.**—Day courses are held for degrees in science. Composition fees for a full-time degree or diploma course in pure or applied science, £20 per session.

**WIGAN.—Wigan and District Mining and Technical College.**—Full-time day courses in chemistry and general science for honours degree (B.Sc.) of London University, A.I.C., national certificates in chemistry and gas engineering, first medical and pharmaceutical examinations. Part-time, day and evening courses.

## Veterinary Surgery

Though perhaps veterinary work offers fewer opportunities than other professions for renown or remuneration, there are comparatively few members of the Royal College who have not attained at least a fair amount of success in one direction or the other. To become a member of the veterinary profession in this country it is necessary to obtain the membership diploma of the Royal College of Veterinary Surgeons. Candidates who desire to enter upon the course of study for this purpose must first pass a recognised examination in general education and submit to the Royal College the certificate so gained for the approval of the Council (10 Red Lion Square, London, W.C.1). The professional course of

training lasts over a period of five years and must be taken at one of the five veterinary schools affiliated to the Royal College. At the end of each school year an examination is held, the subjects being as follows:—

**First Professional Examination.**—Chemistry, physics, biology, botany, zoology, animal husbandry.

**Second Professional Examination.**—Physiology, biochemistry, histology, embryology.

**Third Professional Examination.**—Anatomy, pharmacology and therapeutics, practical pharmacy, animal husbandry.

**Fourth Professional Examination.**—Pathology, veterinary parasitology.

**Fifth Professional Examination.**—Veterinary medicine, surgery; obstetrics and jurisprudence.

Graduates in science, medicine or agriculture, and holders of the diploma of M.R.C.S., or L.R.C.P., may be exempted from the first year's course and the examination at the end of that year. A similar concession may be granted to matriculated students in science, art or medicine who have passed a university examination (with honours or the equivalent) in chemistry and physics, botany and zoology. The examination fee payable to the Royal College of Veterinary Surgeons is £6 6s. for each examination, or £4 4s. for re-examination in the same class. In addition to the post-graduate, several entrance scholarships are open at the affiliated colleges. The Royal College also grants a diploma in Veterinary State Medicine (D.V.S.M.). This is only open to members.

## Veterinary Colleges

(Affiliated to the R.C.V.S.)

**LONDON.—Royal Veterinary College** (founded 1791; incorporated 1875), Great College Street, Camden Town, N.W.1.—Educational fee for five years' course of instruction, £131 5s., may be paid in five instalments. There are also library and other fees amounting to £15. Fees for occasional students are from £3 3s. to £8 8s. per subject, and for those taking the B.Sc. degree in veterinary science of the University of London additional fees totalling £15 15s. Secretary, Mr. T. C. Wight.

**DUBLIN.—Veterinary College of Ireland**, Shelbourne Road, Ballsbridge.—The College is conducted by the Department of Agriculture. The tuition fees amount to £21 for each session. Principal, Professor J. F. Craig, M.A., M.R.C.V.S. Particulars may be obtained from the Registrar.

**EDINBURGH.—Royal (Dick) Veterinary College**, Summerhall (founded 1823).—Class fees for the complete curriculum amount to approximately £135. There is also a matriculation fee of 10s. 6d. payable by all students at the beginning of each session. Principal, O. Charnock Bradley, M.D., D.Sc., M.R.C.V.S.

**GLASGOW.—Glasgow Veterinary College** (established 1862; incorporated 1909), Buccleuch Street, Garnethill. Full particulars are obtainable from the secretary. Principal, Professor A. W. Whitehouse, M.A., M.R.C.V.S.

**LIVERPOOL.—The University Veterinary School** gives a university training for the M.R.C.V.S. and also for a veterinary degree. For the fees and complete curriculum application should be made to the Director.

## Veterinary Degrees

Having obtained his diploma the graduate is eligible for numerous official appointments at home and abroad and commissions in the veterinary units of the Army. A member of the Royal College who has been engaged in the practice of his profession for two years or upwards may present himself for examination for the diploma of Fellowship (F.R.C.V.S.). Veterinary science degrees are granted by several universities, including Edinburgh, Liverpool and London, to candidates who matriculate and take the prescribed course of study.



## Optical Diplomas

Chemists receive a certain amount of optical education during their studies for the Pharmaceutical Society's Qualifying examination, and from an educational or business point of view there is scarcely any subject which they can subsequently study with greater benefit. In this country it is not essential to pass an examination before commencing business as an optician, but the possession of a diploma issued by one of the leading examining bodies is eminently desirable. The standard of these examinations is being gradually raised, and in one instance matriculation or its equivalent is a necessary preliminary.

### The Diploma Schemes

THE SPECTACLE MAKERS' COMPANY, 36 Furnival Street, Holborn, London, E.C.4, holds its examinations (a) Fellowship, (b) Honours, in London in May and November and occasionally in the provinces. The former is divided into three parts; candidates over the age of seventeen years may enter for Part I, but not for Parts II and III until they have attained eighteen years. In no case can the diploma be taken up before the age of twenty-one. No candidate is passed in any section of Parts II or III unless he has satisfied the examiners in all sections of Part I. The subjects of the examination are as follows:—*Part I:* (a) A practical examination in the measurement of focal powers of lenses and an experiment selected from optics and ophthalmic lenses of (c); (b) a *viva voce* examination on (c); (c) a written paper on light, optics and ophthalmic lenses; a practical examination in neutralisation, setting and marking for edging of lenses and prisms. *Part II:* (e) a practical examination in face measurement, frame measurement and frame manipulation; (g) a written paper on visual optics and refraction, ophthalmic instruments, frame fitting and measurement; (h) a practical examination involving subjective and objective testing of living subjects. *Part III:* (j) a practical examination on (l); (l) a *viva voce* examination on (l); (l) a written paper on anatomy and physiology of vision and recognition of abnormal ocular conditions.

The Honours examination, which is open to diploma holders who have passed the Fellowship examination at least twelve months previously, is a more advanced test for those who are interested in the fundamental principles of their work.

The fees are as follows:—Fellowship: Part I £4 4s., Part II £4 4s., Part III £3 3s.; Honours: £5 5s. The prospectus giving full particulars of the examinations may be obtained from the clerk to the Company at the above address.

THE BRITISH OPTICAL ASSOCIATION, Clifford's Inn Hall, London, E.C.3, conducts a Preliminary, a Dispensing, a Fellowship, and an Honours examination, the first-named being in general education and the others in optics. No candidate will be accepted for the Fellowship examination who has not previously passed the Preliminary or an examination of matriculation standard. The Fellowship examination is divided into five sections, as follows: (A) Estimation of refractive errors; (B) physiologic optics; (C) mechanical and physical optics; (D) anatomy and physiology; (E) recognition of pathological conditions. The Dispensing examination consists of (C) of the Fellowship. The Honours examination is in the following subjects: (A) Advanced physiological optics; (B) ocular embryology and physiology; (C) recognition of pathologic conditions of the eye; (D) ethics and etymology. The examination fees are: Preliminary, £2 12s. 6d.; Dispensing, £2 2s.; Fellowship, £10 10s.; Honours, £5 5s. The Preliminary and written papers of the Fellowship and Honours examinations are held twice yearly in London, Manchester and Edinburgh. Practical examinations in the Fellowship, Honours and Dispensing grades are held in London twice yearly in May and November; annually in Manchester, Liverpool

and Edinburgh, and occasionally in other centres. All candidates, prior to examination, must submit evidence of at least 500 hours' training in mechanical and technical optics, 100 hours' clinical training at a recognised institution, of attendance at an approved course in clinical experience specifically arranged with abnormal or pathological subjects at a recognised institution, and of twelve months' employment or business training with an approved optical firm or optician. This evidence to be in addition to the mechanical and technical training.

Candidates for the Preliminary examination must have attained the age of sixteen years. All examinations are open to persons of both sexes over eighteen years of age. Successful candidates over the age of twenty-one, or on attaining the age of twenty-one, will be required to take up membership of the Association. Certificates are not supplied until the applicant has reached the age of twenty-one, and thus entitled to become a member of the Association. The full prospectus may be obtained from the secretary.

THE NATIONAL ASSOCIATION OF OPTICIANS, 130 Princes Road, Liverpool, has instituted a diploma scheme under which examinations are held in January and July at such places as the Council may determine. The examination consists of two parts, the First and the Final, which may be taken separately. The former is open to candidates under the age of twenty-one, but no certificate is issued until they are fully qualified. The subjects are as follows:—

*First:* (a) A written examination in general and practical optics, and optical calculations. (b) Oral examination in general and practical optics, and optical calculations. Fee, £3 3s.

*Final:* (a) Written examination in visual optics, in anatomy, physiology and diseases of the eye. (b) *Viva voce* examination in visual optics, in anatomy, physiology and diseases of the eye. (c) Practical sight-testing. (d) Practical face and frame measurements. (e) Practical analysis and marking of lenses and prisms. Fee, £3 3s.

Two scholarships are offered annually to optical students under twenty-one years of age; particulars of these and the prospectus may be obtained from the Secretary, at the above address.

### Optical Instruction

The following are among the principal schools where the necessary instruction in preparation for the examinations may be obtained:—

NORTHAMPTON POLYTECHNIC INSTITUTE, St. John Street, London, E.C.1.—Complete training is given for ophthalmic and dispensing opticians. The department is provided with extensively equipped laboratories for anatomy, physiology of vision, objective and subjective sight testing and clinical work, general optics and optical instruments, together with workshops for lens grinding, edging, instrument making and spectacle-frame work. Living cases are provided for examination by students throughout the session. The ground required for the F.S.M.C. and F.B.O.A. examinations is covered in both day (full-time or part-time) and evening courses. The fees range from 30s. per session for evening courses to £20 for the full-time day course. The courses are recognised by the British Optical Association for mechanical and technical training, clinical training and clinical experience. Scholarships tenable at the two years' full-time day course are offered by the Worshipful Company of Spectacle Makers, the Aitchison Memorial Committee, and the Governing Body of the Polytechnic. Evening classes commence on September 26 and day classes on October 3. Prospectus and full particulars on application.

REFRACTION HOSPITALS.—The lectures and demonstrations arranged in connection with the granting of the hospital certificate commence in October. The subjects include physiology, pathology, embryology, methods of examination, use of drugs and hospital routine. Post-graduate students in ophthalmic optics may attend the hospital without taking the examination. The three hospitals have been recognised by the British Optical

## Educational Information

Association for clinical experience, and London for clinical training in addition. Full particulars can be obtained from 58-60 Newington Causeway, London, S.E., or 51 St. Paul's Street, Leeds, or 26-28 Richmond Street, Glasgow, C.1.

**THE SCHOOL OF OPTICS, LTD.**, 2 Guilford Place, London, W.C.1, where Mr. Lionel Laurance and Mr. H. Oscar Wood prepare students for the recognised qualifying examinations, is well fitted up and thorough training is given. The complete full-time course (fee £31 10s.), which commences in May and November of each year, terminates with the next succeeding examination, and covers the entire syllabus. The part-time combined course (fee £14 14s.), which can be commenced at any time, consists of homework by correspondence, supplemented by classes held during the month preceding the examination, and, prior to it, on Wednesday and Thursday afternoon of every week. The School is recognised by the British Optical Association for mechanical, technical and clinical training.

**BRITISH OPTICAL INSTITUTE, LTD.**, Fern Lodge, 20A Grove Road, Brixton, London, S.W.9 (Principal, Dr. Max Coque, B.Sc.)—Full courses cover the entire syllabus of all optical examinations. Afternoon classes are held all the year round on two days a week in order to enable students to carry out all branches of practical work. Evening classes are held during the three months and daily revision classes during the month preceding each London examination. There has also been arranged a correspondence course which is recognised as part of the 600 hours' mechanical and technical training required by the regulations of the British Optical Association. The Institute is a recognised training centre in connection with the new regulations of the B.O.A. For particulars apply to the Principal.

MR. C. A. SCURR, F.S.M.C., F.B.O.A., chemist and druggist, 50 High Stret, Barnet, prepares candidates for either of the foregoing examinations. The courses, being mainly correspondence, are particularly suitable for those desiring an optical qualification by spare-time study. The practical work is usually performed during a visit to London, when the practical and revision classes are held, just prior to the examination. The fees vary from £5 5s. to £9 9s., according to the examination.

MR. WALTER SIMPSON, F.S.M.C., F.B.O.A. (Hons.), chemist and druggist, 510 Fulham Road, London, S.W.6, conducts correspondence courses for the B.O.A. and S.M.C. examinations, the lectures being supplemented by practical instruction to suit the students' convenience. Mr. Simpson has special facilities for

students to become acquainted with abnormal conditions and ocular disease. A post-graduate course for honours examinations is also available. Further details are given in the prospectus.

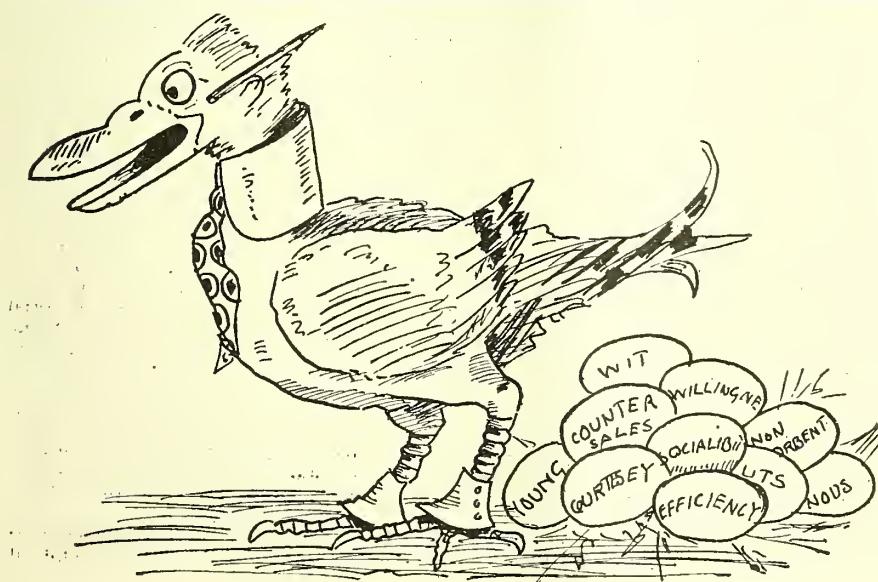
**TECHNICAL COLLEGE, Bradford.**—Courses in applied optics have been specially arranged to meet the requirements of ophthalmic and dispensing opticians, and particularly those entering for the examinations of the British Optical Association and the Worshipful Company of Spectacle Makers. The courses are fully recognised by the British Optical Association for mechanical and technical training, clinical training and clinical experience. Registration for next session begins on September 12 and evening classes on September 20.

**MUNICIPAL COLLEGE OF TECHNOLOGY, Manchester,** provides a full-time day course in applied optics extending over a period of two years. Candidates are required to pass an entrance examination (unless they have passed an approved equivalent examination), on which also a British Optical Association Scholarship of the value of £40 per annum is awarded. The College also conducts evening classes which cover the examination syllabuses of, and which are recognised by, the British Optical Association.

**WEST HAM MUNICIPAL COLLEGE, Romford Road, Stratford, London, E.15,** holds classes, conducted by Mr. W. Swaine, B.Sc., F.Inst.P., F.S.M.C., in pure and applied optics, on Thursday afternoons (2.0-5.0) and evenings (6.9-30). These are suitable for ophthalmic, dispensing and instrument opticians, and cover the syllabuses of the optical examinations. The College is recognised by the British Optical Association for mechanical and technical training. Fees: For East Ham and West Ham residents, 14s.; other students, £1 8s. Enrolment September 19 to 23. Classes commence September 29. Apply for prospectus and other particulars to the Principal.

**HERIOT-WATT COLLEGE, Edinburgh,** has arranged a course in ophthalmic optics which extends over three years and meets the requirements of the Worshipful Company of Spectacle Makers and the British Optical Association. The course has been recognised by the latter body for mechanical, technical and clinical training. A composite fee of £2 2s. is charged for each year of the course.

**THE COLLEGE OF OPTICS, 395 Argyle Street, Glasgow,** holds all-day part-time and postal courses. Classes are also held in Edinburgh, Dundee and Aberdeen. The Principal is Mr. T. S. Baird, Argyle Street, Glasgow.



### L'OISEAU AUXILIAIRE

In sending this sketch "D. T. D." (5/7) states:

"I wrote to a friend who was 'on the road,' and asked him to look out for an assistant having certain qualities enumerated. This was his reply by return of post." The author of the drawing says that this very rare bird is now extinct—or at least has not passed his way lately.

# Fairchild Scholarship and Prizes

THE 1932 examination for the Fairchild scholarship and prizes was held on June 16 at the following centres:—Cardiff, Edinburgh, London and Manchester. The candidates who complied with all the conditions and entered for this year's examination numbered thirty-five; twenty-eight represented England, five represented Scotland, and two represented Wales. There were no entries this year from Northern Ireland or the Irish Free State. The questions were set and assessed by:—Mr. Harry Brindle, B.Sc.Lond., F.I.C., Ph.C. (chemistry and physics); Mr. Peter Boa, Ph.C. (practical pharmacy and prescription-reading); Mr. Thomas Marns, M.P.S. (business knowledge and sale of poisons); and Professor J. Small, D.Sc., Ph.C., F.L.S., F.R.S.E. (botany). The following are the results:—



MR. J. M. ROWSON

Melrose, Methil, Fife, and afterwards employed as assistant with Findlay & Co., Portobello, and Mr. T. Spence, Portobello.

The prize for Wales could not be awarded, as no Welsh candidate obtained 40 per cent. of marks in each subject. The following is the text of the papers:—

## CHEMISTRY AND PHYSICS

(Time allowed—two hours.)

(1) What do you understand by the terms *specific heat* and *latent heat*? Describe, with practical details, how you would determine these two values for ice without assuming either to be known in the first instance.

A calorimeter contained 55 grams of water at 11° C., 20 grams of a metal with a specific heat of 0.095 and at a temperature of 100° C. were dropped into the calorimeter. The final temperature was 13.6° C. What value does this give for the water equivalent of the calorimeter?

(2) Explain briefly the principle, structure and uses of one form of each of the following electrical measuring instruments: (a) Galvanometer, (b) ammeter, (c) voltmeter, (d) voltameter, (e) potentiometer.

(3) Describe the commoner methods for the preparation of ordinary boric acid. What is the action of heat upon boric acid? By what tests would you recognise the presence of a borate in a "salt" during qualitative analysis and what modifications, if any, in the ordinary procedure does the presence of a borate necessitate?

(4) Briefly indicate some general methods by which oxides may be prepared, giving two examples of each method. Give some examples of the varying action of heat upon oxides.

(5) Give Gay-Lussac's law concerning gaseous chemical action and show how it is concerned with the atomic theory.

100 c.c. of a mixture of carbon monoxide and oxygen were exploded and the volume of the resulting gas measured at the original temperature was 80 c.c. Carbon monoxide was proved to be absent in the final mixture. Calculate the volume of carbon monoxide originally present.

## BOTANY

(Time allowed—one hour.)

(1) Draw a large scale diagram of a typical tree-bark as seen in transverse section. Label all the tissues and discuss briefly the function of each tissue. Include in your diagram at least one lenticel and explain the function of this structure.

(2) Tabulate the essential distinguishing features of the following fruits—follicle, silicula, pyxidium, achene, caryopsis, cypsela, samara, lomentum, cremocarp, pome.

(3) Write a short essay on the green leaf as the fundamental food-producing organ; including some account of how it functions, what it makes, and the relation of its products to plant and animal life.

## PRACTICAL PHARMACY AND PRESCRIPTION READING

(Time allowed—one hour and a half.)

(1) Describe in outline the official directions for preparing:—

(a) Atropine ointment. (b) Rose water ointment. (c) Plummer's pill. (d) Compound infusion of orange peel.

State the principal constituents and the proportion of active ingredients in (a) and (c). What purpose is served by the use of oleic acid in (a) and rose water in (b)? Is fresh or dried lemon peel used in (d)?

(2) Write the full official Latin name for the following:—Plummer's pill, phenol suppositories, tincture of balsam of tolu, gynocardia ointment, infusion of orange peel, decoction of triticum.

(3) Write the equivalent in grams of 1 grain, 1 ounce and one pound; and the equivalent in grains of 1 milligram, 1 decigram and 1 kilogram.

(4) Compare liniment of lime with liniment of turpentine and indicate wherein there is similarity and difference in the finished products, in a pharmacal sense.

(5) Write the following prescriptions in English and render the directions in appropriate terms:—

(a) Extract, silicis liq., 3i.; pulv. acaciae, 3iss; aqua cinnam. ad 3iii. Misce fiat haustus. Sig.: Mane sumendum.

(b) Magnes. carb. lev., gr. x.; bismuth. carb., gr. v.; pulv. rhei, gr. i.; aqua menth. pip. ad 3ii. Mitte 3vi. Sig.: Coch. med. parv. ter die post cibos sumend.

Describe procedure in compounding both prescriptions.

## BUSINESS KNOWLEDGE AND SALE OF POISONS

(Time allowed—one hour.)

(1) Rule a form of petty cash book containing necessary columns including a column for such payments as may require to be posted direct to the ledgers. Enter therein the following transactions, bring down the balance on hand at the end of the period.

		£ s. d.
March 1, 1932.	Received cash from bank ..	.. 20 0 0
" 2, "	Paid postage ..	.. 0 5 0
" 3, "	Telegram ..	.. 0 1 5
" 3, "	Gas Bill to 31st Dec., 1931 ..	.. 5 9 3
" 4, "	Charwoman for cleaning ..	.. 0 7 6
" 4, "	Fares to City ..	.. 0 1 6
" 4, "	Insurance and unemployment stamps ..	0 4 8
" 5, "	Postage ..	.. 0 5 0
" 5, "	Repairs to taps and sink ..	.. 0 8 9
" 8, "	New typewriter ..	.. 10 0 0
" 8, "	Cash book ..	.. 0 10 6
" 9, "	Carriage on parcel ..	.. 0 5 2
" 9, "	Charwoman for cleaning ..	.. 0 7 6

(2) (a) What insurance is necessary for a chemist's business? Give the various types of policies, and reasons for their necessity.

(b) What is the present bank rate? When and by whom is it fixed?

(3) What regulations must be observed when selling the following articles by retail? Hydrarg. perchlorid., potas. ferricyanid., acid nitric. B.P., syrups glycerophosph. co. B.P.C., ext. ergotae liq., Easton's syrup tablets, Dover's powder.

(4) Write a short letter to a new resident in your district pointing out the service that you can offer, and the advantages of dealing at your pharmacy.

# An Hour with Redwood

**S**UNDAY, noon. The morning's dispensing seems to have been confined, as it should be, to to-day's requirements without rectifying yesterday's omissions or anticipating to-morrow's requirements—a state of affairs none too familiar to hospital pharmacists. To while away an hour till lunch-time I take a peep into the "Supplement to the Pharmacopœia," produced by Theophilus Redwood something like three-quarters of a century ago. The title-page informs me that it is a "concise but comprehensive Dispensatory and Manual of Facts and Formulae." Glancing further and noting that there are 1,030 pages of matter and an index of 131 more, I feel inclined to wonder, since that is "concise," what a complete and exhaustive work would be like.

Turning to page 1, I am told that pharmacy, as a distinct and separate branch of the medical profession, was first recognised by law in Arabia; and, of our own country, that "in 1345 King Edward III gave a pension of sixpence a day to Coursus de Gangland, an apothecary in London, for taking care of and attending his Majesty during his illness in Scotland." There is a lot more about the pharmacopœias and dispensaries of various countries at different times, but that I skip. Some wiseacre, I forget who, once said that the proper study of mankind is man. Consequently, when I come to "Order 1, Bimana," I pause to study the following "Homo, Man." This is the only genus in this order." After learning that London Pharmacopœias of long ago included among their simples human blood, the wax of the ears, the skull of a man who has suffered a violent death, and sundry other delicacies, I must make a note of "the parings of the nails were esteemed a good emetic," possibly valuable information if I am ever short of vin. ipecac. in an emergency.

### Animal Remedies

Among a long list of animal substances I see that "the ashes of the head of a black cat, put into the eye with a quill, helpe the haw, wert, and web in the eye"; the roasted brain of a hare "makes children breed teeth easily"; elephant's tooth "may be given in yellow jaundice" and the fat of a hippopotamus "applied to the pulse or stomach will relieve fits of ague." Birds, too, contribute their quota. The sufferer from headache could obtain relief from the bones of an eagle's head or the brain of an owl; for those unfortunates who could not woo tired nature's sweet restorer a heron's bill provided an alternative to counting sheep. The abstemious bishop who felt a pain under his apron and objected to a little wine, even "for his stomach's sake," might take instead the heart of a lark or the ashes of a cuckoo. The latter, as well as the heart of a moorhen and the liver of a partridge, were a boon to epileptics! the humble house-sparrow gave its flesh for renal calculi, and its fat for hard tumours; while the graceful swan benefited sufferers from nerviness with its fat and those with erysipelas with its eggs. My cursory glance is not arrested by anything very striking among the fishes; and, coming to reptiles, while I am thankful for my freedom from pulmonary affections, I do not think that even if that were not so I should be tempted by the soup of the slug "to be met with at every step we take in wet weather." Nor do I think I shall ever test Pliny's assertion that "the ashes of earth-worms with oil preserve hair from hoariness"; to say nothing of a host of savoury and unsavoury articles unmentionable in polite society. By the way, Mr. Redwood, I observe that you use the past tense in innumerable instances, so I conclude that these remedies (!) had fallen into disuse even in 1857.

We are all well aware that we are regarded as public benefactors, privileged to minister at all times and in all places to the needs, urgent or otherwise, of more or less grateful beneficiaries. Your book, Mr. Redwood, would, if you will allow me to say so with all deference, produce simply diabolical effects if it were to become public knowledge that it taught the long-suffering

chemist how to prepare so many and varied articles, both of necessity and luxury. You tell us, for instance, how to make bread. Would not this tempt people to neglect to lay in a sufficient supply, say, on a Saturday, if they thought they could run round to the nearest chemist and catch him just before he started off to church? Would it be in keeping with the best traditions of high-class pharmacy if the presiding genius of the kitchen (unless it were our own) approached us for mushroom ketchup, pickles or vermicelli? Are we to understand that the "practitioners in medicine and pharmacy" mentioned on your title-page were worried in their day and generation with requests for such things? If I had been there, I fear I should have taken a fiendish delight—the more so as its after-effects would doubtless stimulate legitimate pharmacy—in supplying a "trifle" made according to your formula—tin 83 parts, antimony 17 parts. Then there are your "cigarettes." I don't know whether Miss 1857 was a smoker, if so, possibly "cigarettes aromatiques," made of aromatic spices and lavender flowers, might suit her. The doper might like the opium cigarettes "made of belladonna leaves moistened with a solution of extract of opium," particularly as no D.D. Act then interfered with his enjoyment.

### Domestic Recipes

It must have been an advantage to the chemist when courting Miss 1857 to have been able to regale her with, in addition to perfumery and so forth, sugar plums, toffy, raspberry vinegar and British wines economically prepared in accordance with your directions. Nor are these the only advantages you confer on the amorous chemist. You tell him how to prepare ink, useful for love-letters as well as labels; and when he settles down in the happy home, he would doubtless make the culinary preparations mentioned with more enthusiasm when they were for his own use. Last, but not least, what a privilege it would be to deck the fair charmer with diamonds, emeralds, rubies, and sapphires at very little expense—the fact of their manufacture "of a high degree of perfection" from your directions being a mere detail of which she need not be informed. (I leave it to the younger generation to find by experiment how it would answer with Miss 1930.)

I turn my attention to formulas of a more pharmaceutical character. To begin with, the use of the fragrant weed to prepare unguentum tabaci appears almost an abuse of a good friend. Another formula, it seems to me, might be a profitable line in these days when a youthful appearance is so much appreciated, provided that it justified the testimonial given to it in a record, dated 1235, preserved in the Imperial Library at Vienna:—"I, Elizabeth, Queen of Hungary, being very infirm, and much troubled with the gout in the seventy-second year of my age, used for a year this receipt, given to me by an ancient hermit, whom I never saw before nor since; and was not only cured, but recovered my strength, and appeared to all so remarkably beautiful, that the King of Poland asked me in marriage, he being a widower and I a widow." The recipe is rosemary macerated and distilled with aqua vitae, and the directions are "take 1 drachm in the morning once every week, and let your face and diseased limb be washed with it every morning." I must bear that in mind for possible future use, as it sounds less risky than monkey-glands, besides costing less. My eye lights on one more, with the Satanic name of "oil of the infernal regions (oleum omphacum)," an impure residue separated from the water used in one process of expressing olive oil. Is the name intended to convey a hint of the locality where it is used? I notice that you say "it is only fit for burning."

And now the clock strikes one, so I depart. Good day, Mr. Redwood, with best thanks for a pleasant hour, and further thanks in anticipation of a renewal of the acquaintance another time.—H. C. B.

# Trade Report

Where possible scales of prices of chemicals are given for bulk down to small quantities. Prices recorded for crude drugs, essential and fixed oils and coal tar products are for fair sized wholesale quantities. Qualities of chemicals, drugs, essential and fixed oils, etc., vary, and selected brands or grades would be at higher values

## 28 Essex Street, W.C.2, August 18

MARKETS remain generally quiet although in some cases quite a lively interest is shown. The more hopeful feeling commented upon last week is being maintained. There is little change to report in the pharmaceutical chemical market except that home makers' quoted prices for cream of tartar and tartaric acid are lower. In crude drugs business has been fair on limited lines, and the general tone remains steady. Balsam of tolu is dearer on spot. Buchu is in steady demand. Cod-liver oil is firmer. Colchicum root remains scarce. Senega has experienced a sharp advance. Alexandrian senna remains quiet; Tinnevelly is firm. Shellac is firmer. Beeswax, on spot, is reported to be getting scarce, and holders are asking higher prices. In essential oils a moderate business is passing. Citronella, Java and Ceylon, are firm. Lemongrass is dearer. American peppermint oil is dearer for shipment.

## Exchange Rates on London

THE following is a list of the chief Continental and other exchange rates at the opening on Thursday morning:—

Centre	Quoted	Par	August 18	Value of the £
Amsterdam ..	Fl. to £	12.107	8.63	14/3
Berlin ..	Mks. to £	20.43	14.12	14/3½
Brussels ..	Belga to £	35	25.04½	14/3½
Copenhagen ..	Kr. to £	18.159	18.70	20/7
Lisbon ..	Esc. to £	110	110	20/0
Madrid ..	Ptas. to £	25.22½	43½	33/11½
Milan ..	Lire to £	92.46	67½	14/6½
Montreal ..	Dol. to £	4.86½	3.99½	16/5
New York ..	Dol. to £	4.86½	3.47½	14/3½
Oslo ..	Kr. to £	18.159	19.31	22/0
Paris ..	Fr. to £	124.21	88½	14/3½
Prague ..	Kr. to £	164.25	118	15/3
Stockholm ..	Kr. to £	18.159	19.47½	21/5½
Warsaw ..	Zloty to £	43.38	31½	14/6
Zurich..	Fr. to £	25.2215	17.83½	14/1½

Bank rate 2 per cent.

## Pharmaceutical Chemicals, etc.

THERE is little change to report on the week, while the markets remain very quiet. Cream of tartar and tartaric acid are lower.

ACETANILID remains dull and is quoted unchanged: B.P. crystals and powder, 1s. 5½d. to 1s. 8d. per lb., as to quantity.

AMIDOL meets with some occasional small business: 56 lb., 7s. 3d.; 28 lb., 7s. 6d.; 14 lb., 7s. 11d. per lb., in 7-lb. tins.

AMIDOPYRIN.—Dealers' prices remain steady: crystals, two cwt., 17s.; less than two cwt., 17s. 6d. per lb., with powder 2d. per lb. extra.

ASPIRIN.—Makers' and dealers' prices remain very steady. Home trade: ten cwt., 2s. 7d.; five cwt., 2s. 8d.; one cwt., 2s. 8½d.; 28 lb., 2s. 9d.; 14 lb., 2s. 10d.; 7 lb., 3s.; 1 lb., 3s. 4d., per lb. Export to Colonies and British Possessions: ten cwt., 2s. 7d.; five cwt., 2s. 8d.; one cwt., 2s. 8½d. per lb., f.o.b.; less than one cwt., 2s. 9d., per lb., ex works.

BISMUTH SALTS.—Makers' prices are as follows:—

—	8 lbs. and under 28 lbs.	28 lbs. and under 1 cwt.	Not less than 1 cwt.			
				Per lb.	Per lb.	Per lb.
Carbonate ..	7 3	6 9	6 6	s. d.	s. d.	s. d.
Citrate ..	9 7	9 1	8 10			
Nitrate cryst. ..	5 1	4 7	4 4			
Oxido ..	10 9	10 3	10 0			
Salicylate ..	8 0	7 6	7 3			
Subchloride ..	10 7	10 1	9 10			
Subgallate ..	7 8	7 2	6 11			
Subnitrate ..	6 5	5 11	5 8			

A rebate of 3d. per lb. will be allowed on sales of not less than 2 cwt. (either for prompt delivery or on contract)

provided delivery is completed or paid for within three months. Liquor bismuthi (B.P.) in w-qts., 1s. 1½d. per lb.; in six w-qts., 11d. per lb.; in 12 w-qts., 9½d. per lb.; in 36 w-qts., 9d. per lb., without engagement.

BENZOIC ACID (B.P.) remains steady with business moving on a limited scale: quantities, ex works, 1s. 10½d.; spot parcels, 1s. 11d. to 2s. per lb., ex store.

BROMIDES.—The market is steady and a moderate volume of business is being done. Ammonium, not less than five cwt., 1s. 9d.; one cwt., 1s. 10d.; smaller quantities, 2s. 1d. per lb.; potassium, B.P. crystals and granular, not less than five cwt., 1s. 6d.; one cwt., 1s. 7d.; smaller quantities, 1s. 10d. per lb.; sodium, B.P., not less than five cwt., 1s. 8d.; one cwt., 1s. 9d.; smaller quantities, 2s. per lb., net, without engagement. Special prices for large quantities.

CHLORAL HYDRATE.—Makers' prices remain unchanged: duty-paid crystals, in 14-lb. free containers, five cwt., 3s. 4d.; one cwt., 3s. 5d.; 56 lb., 3s. 6d.; 28 lb., 3s. 7d.; 14 lb., 3s. 8d. per lb.; 28-lb. jars, one penny per lb. extra.

CHLOROFORM.—Makers' prices for home trade are unchanged: in drums, 2s. 3d. to 2s. 6d.; winchesters, 2s. 3½d. to 2s. 6½d.; 2-lb. bottles, 2s. 4½d. to 2s. 7½d.; 1-lb. bottles, 2s. 5½d. to 2s. 8½d.; 8-oz. bottles, 2s. 6½d. to 2s. 9½d.; 4-oz. bottles, 2s. 8½d. to 2s. 11½d., for ten cwt. down to 56-lb. lots; carriage paid on minimum cwt. lots.

CITRATES.—There is no change in home makers' prices: potassium citrate, B.P., 1s. 7d.; sodium citrate, B.P.C. 1923, 1s. 8d.; ferri ammon. cit. B.P. (brown), 1s. 9d. per lb., in 28-lb. lots; 7-lb. lots, 5d. per lb. dearer.

CITRIC ACID (B.P. CRYSTALS).—Home makers' quoted price remains unchanged at 1s. per lb., less 5 per cent. discount, nominal and without engagement.

COCAINE.—Makers' prices for home trade are unchanged: hydrochloride, 25 oz., 20s. 11d.; 16 oz., 21s. 7d.; and less, 22s. 3d. per oz.; pure, 25 oz., 22s. 1d.; 16 oz., 23s. 8d.; less than 16 oz., 24s. 4d. per oz.; 1-oz. tins, 2½d. extra. Export prices vary according to destination.

CREAM OF TARTAR.—Home makers' quoted price for 99 to 100 per cent. is reduced to 87s. per cwt., less 2½ per cent. discount, nominal and without engagement.

ETHER (METHYLATED).—Home makers' prices continue at former rates: s.g. 0.750, 1s. 1½d.; 0.755, 1s. 2d.; 0.730, 1s. 2d.; 0.725, 1s. 4d., per lb., in w-quarts; 12 w-quarts, halfpenny less, and packed in drums or carboys, 1d. less.

HYDROQUINONE.—Dealers' prices are unchanged: ten cwt., 4s. 8½d.; five cwt., 4s. 9½d.; two cwt., 4s. 10½d.; one cwt., 4s. 10½d.; 56 lb., 4s. 11½d.; 28 lb., 5s. 1½d.; 14 lb., 5s. 3½d.; 7 lb., 5s. 5½d., carriage paid.

IODIDES.—Makers' prices are as follows: Potassium iodide, B.P.: For not less than one cwt., 17s. 10d.; 23 lb., 18s. 1d.; 14 lb., 18s. 4d.; 7 lb., 20s. 9d.; 4 lb., 21s. 2d.; smaller quantities, 21s. 7d. per lb. Sodium iodide, B.P.: For not less than 28 lb., 19s. 4d.; 14 lb., 19s. 10d.; 7 lb., 22s. 10d.; 4 lb., 23s. 3d.; smaller quantities, 23s. 9d. per lb. Iodine resub., B.P.: For not less than one cwt., 20s. 8d.; 23 lb., 20s. 11d.; 14 lb., 21s. 5d.; 7 lb., 23s.; 4 lb., 24s. 2d.; smaller quantities, 26s. per lb. Iodoform, B.P. cryst., precip, or powder: For not less than 28 lb., 23s. 9d.; 14 lb., 24s. 3d.; 7 lb., 28s. 1d.; 4 lb., 23s. 8d.; smaller quantities, 29s. 3d. per lb. In quantities not less than one cwt. (which may be taken assorted), containers of 28 lb. and outer packages free, carriage paid. Prices are quoted without engagement. Contracts for one cwt., five cwt., ten cwt., or larger quantities, for delivery as required during a period of four months, with rebates applicable to the quantity booked.

LACTIC ACID (B.P.).—The market is steady, with business limited: quantities in earboys, 1s. 5½d. to 1s. 6d. per lb.; small lots in demijohns and winchesters, 1s. 7d. to 1s. 8½d. per lb., carriage paid.

METHYL SALICYLATE (B.P.).—Makers' and dealers' prices remain unchanged: one ton and over, 1s. 4½d.; ten cwt., 1s. 5d.; five cwt., 1s. 5½d.; one cwt., 1s. 6d.; less than one cwt., 1s. 6½d.; smaller quantities in bottles, up to 2s. per lb.

METHYL SULPHONAL is dull, but dealers' prices remain steady: two cwt., 18s. 9d.; one cwt., 19s. 3d.; 56 lb., 19s. 9d.; small parcels, 20s. 6d. per lb.

METOL has been rather quiet; market steady: 56 lb., 9s. 3d.; 28 lb., 9s. 6d.; 14 lb., 9s. 9d.; 7 lb., 10s. 9d. per lb., in tins; bottles extra. Wholesale distributors' prices for small quantities at higher rates.

MORPHINE.—Makers' prices are as follows:—

	Under 5 oz.	5 oz. and over assorted	For 100 oz. assorted contracts over 6 months	For 250 oz. assorted contracts over 6 months
Morphine :				
alkaloid precip.	oz.	oz.	oz.	oz.
meconate ..	23/2	22/1	21/7	21/1
tartrate (neutral) ..				
acetate ..				
hydrochloride powder ..	18/8	17/10	17/4	16/10
sulphate ..				

Fall clause for contracts of 100 oz. and over...

PARAFORMALDEHYDE is quoted unchanged: 100 per cent. powder, quantities in kegs, 1s. 1½d. to 1s. 2d.; smaller parcels, up to 1s. 7d. per lb.

PHENACETIN.—The market is quiet: crystals, ten cwt., 9s. 3d.; five cwt., 5s. 4d.; two cwt., 5s. 6d.; and less, 6s. per lb., with powder 2d. per lb. extra.

PHENAZONE has remained rather quiet: crystals, ten cwt., 9s. 3d.; five cwt., 9s. 6d.; two cwt., 9s. 9d.; and less, 10s. 3d. per lb., with powder 2d. per lb. extra.

POTASSIUM PERMANGANATE (B.P.).—The market is steady, with business fair: quantities in drums, 8½d. to 9d.; drugists' parcels, 9d. to 10d. per lb.

PYROGALLIC ACID.—Makers' prices are unchanged: one cwt., 6s. 9d.; 56 lb., 7s.; 28 lb., 7s. 3d.; 14 lb., 7s. 9d.; 7 lb., 8s. 6d. per lb., in 7-lb. tins.

QUININE SULPHATE.—The Convention price remains at 2s. 4d. per oz., carriage paid on bulk quantities.

RESORCIN.—Business is quiet; market steady: crystals, one cwt., 4s. 6d.; 56 lb., 4s. 7d.; 28 lb., 4s. 8d.; 14 lb., 4s. 10d.; 7 lb., 5s.; less than 7 lb., 5s. 6d. per lb., with powder 3d. per lb. extra.

ROCHELLE SALTS.—Makers' prices are steady: powder, five cwt. and over, in one delivery, 82s. 6d.; less than five cwt., 88s.; less than one cwt., 87s. 6d. per cwt.; crystals, 2s. 6d. per cwt. extra. Pulv. seidlitz, five cwt. and over, in one delivery, 66s. 3d.; less than five cwt., 68s.; less than one cwt., 70s. per cwt. Double seidlitz, five cwt. and over, in one delivery, 73s. 3d.; less than five cwt., 75s. 6d.; less than one cwt., 77s. 6d. per cwt. Quoted without engagement; special prices for quantities and contracts.

SALICYLIC ACID (B.P.).—Business is about normal, and makers' prices are unchanged: one ton, 1s. 5d.; ten cwt., 1s. 5½d.; five cwt., 1s. 6d.; one cwt., 1s. 6½d.; small parcels, up to 2s. per lb.

SALOL continues at controlled prices: crystals, two cwt., 5s. 2½d.; one cwt., 5s. 4½d.; 56 lb., 5s. 6d.; smaller parcels, 5s. 7½d. per lb.; powder, 2d. per lb. extra.

TARTARIC ACID (B.P. CRYSTALS).—Home makers' quote 11½d. per lb., less 5 per cent. discount, nominal and without engagement.

VANILLIN meets with occasional business: ex guaiacol, one ton, 14s. 3d.; ten cwt., 14s. 6d.; five cwt., 14s. 9d.; three cwt., 15s.; one cwt., 15s. 3d.; 56 lb., 15s. 6d.; 28 lb., 15s. 9d.; 14 lb., 16s.; less, 16s. 3d. per lb.; ex clove oil, 16s. to 18s. per lb., as to quantity, from one ton to less than 14 lb.

#### Crude Drugs, etc.

AGAR-AGAR.—Spot, Kobe No. 1, 3s.; No. 2, 2s. 10d.; Yokohama No. 1, cheaper at 2s. 10d. per lb. Shipment, Kobe No. 1, 2s. 1½d.; No. 2, 1s. 9½d.; Yokohama No. 1, 1s. 10d. per lb., c.i.f.

ANTIMONY.—The market remains steady: Chinese crude, spot, £16; shipment, £13 10s., c.i.f. Chinese oxide, spot, £25; shipment, £19, c.i.f.

BALSAMS.—Tolu is dearer on spot at about 3s. 4d. Canada remains unchanged at 3s. 6d. to 3s. 9d. per lb.

BUCHU is in steady demand, and during the past week several bales of fair green round leaves have been sold at 1s. per lb. Off-colour, from 10½d. to 11d.; ovals at from 8½d. to 9d. per lb., according to colour. Good green round leaves are still very scarce.

CAMPHOR.—Japanese, spot, slabs, 2s. 4½d.; tablets, 3s. per lb. Shipment, slabs, 1s. 10d.; flowers, 1s. 10½d.; tablets, 2s. 3½d. per lb., c.i.f. English refined is quoted unchanged: flowers, one cwt., 3s. 1d.; 28 lb., 3s. 2d.; small lots, 3s. 3d. per lb. Transparent tablets, 4 oz., 8 oz. and 16 oz., 3s. 4d.; 1 oz. and 2 oz., 3s. 5d.; ½ oz., ¼ oz. and ⅓ oz., 3s. 6d. per lb.

CANTHARIDES.—Russian flies are quoted at about 5s. per lb. to arrive.

CASCARA SAGRADA.—The market is firm, with spot quoted at about 52s. 6d. per cwt. for 1931 peel. Shipment, August-September, 36s. 6d. per cwt., c.i.f., for good bulk quantities.

CHAMOMILES.—The new crop is of very good quality and picking is now in progress. Prices are steady at about 12s. per cwt. for first pickings, August delivery, duty paid.

CLOVES.—The market is steady: Zanzibar, spot, 7½d.; shipment, August-September, 7½d., c.i.f. Madagasear, spot, 7½d. per lb.

The landings of Zanzibar in London during the week ended August 13 were 50, and the deliveries 195, leaving a stock of 1,579, against 542 in 1931. From January 1 to date landings of Zanzibar have been 4,401, against 1,307 in 1931, and the deliveries 4,809, against 1,784 in 1931. Landings of Madagascar for the week ended August 13 were nil, and the deliveries, 47, leaving a stock of 1,497, against 1,246 in 1931. Landings of Madagascar this year to date have been 814, against 2,228 in 1931, and the deliveries 324, against 1,888 in 1931.

COCONUT (DESICCATED) is quiet: spot, fine, 23s. 6d.; medium, 23s.; shipment, halves, August-September, 21s. 9d. per cwt., c.i.f.

COD-LIVER OIL.—This market is much firmer and, as anticipated, shippers have raised their prices by fully 5s. per barrel during the past week. Finest steam-refined, non-freezing medicinal oil, 87s. 6d. per 25-gallon barrel, c.i.f. London. Spot is dearer at 100s. per barrel, ex wharf, London, duty paid. Some brands may be slightly cheaper.

COLECHICUM.—New crop seed is quoted at about 2s. 3d. per lb. to arrive. Root still remains scarce at about 6s. per cwt.

ERGOT.—Spanish new crop is quoted at about 1s. 6d. per lb., c.i.f., for ton lots.

GELATIN.—A moderate amount of business is being done; the market is steady: spot, gold leaf, 2s. 2d.; silver leaf, 2s.; bronze leaf, 1s. 8½d.; thin leaf, 1s. 7½d. per lb. in cwt. cases.

GUM ACACIA.—Business continues slow and prices show no change: spot, Kordofan, cleaned sorts, 37s.; natural, 35s.; bleached, 75s. to 77s. 6d. per cwt. Shipment, Koidofan, cleaned sorts, 31s. 6d.; natural, 29s. 6d. per cwt., c.i.f.

HONEY.—There is no change to report: the market remains steady with former prices maintained.

HYDRASTIS.—The market is slow and unchanged: spot, about 4s. 6d. per lb.

IPECACUANHA.—Matto Grosso, 4s. 9d.; Minas, 3s. 3d. per lb., and less for good quantities.

LAVENDER FLOWERS.—New crop, to arrive, duty paid, quoted at about 145s. for best blue; No. 1, 130s. per cwt.

LIQUORICE ROOT.—Natural is quoted at 19s.; single-peeled at about 42s. 6d. per cwt.

Lycopodium.—Treble-sifted Russian is quoted at about 3s. per kilo.

MENTHOL.—K/S brands on spot at about 12s. 6d. per lb., and less for good quantities. Shipment, August, 9s. 9d.; September, 9s. 9d.; October-December, 9s. 3d. per lb. c.i.f.

OPIUM.—The shipment market continues firm at the recent increase, being equivalent to 1s. 4d. per unit, landed and duty paid.

PEPPER remains steady: Lampung, spot, 6½d.; shipment, August, 5½d.; August-September, 5½d.; August-October, 5½d., c.i.f. Tellicherry, spot, 7d.; shipment, September-October, 66s. per cwt., c.i.f. Aleppy, spot, 6½d.; shipment, September-October, 61s. per cwt. c.i.f. White Muntok, spot, 7½d.; shipment, July-August, 6½d.; August-October, 6½d. per lb. c.i.f.

PIMENTO is firmer: spot, 3½d. per lb.; shipment, September-October, 29s. per cwt. c.i.f.

RUBBER.—Values for all positions show a decline this week. Total U.K. stocks, 105,475 tons, against 137,077 tons a year ago. World stocks at June 30 totalled 583,391 tons, against 539,362 tons on June 30, 1931. Standard, ribbed smoked sheet, sellers, on spot, 2½d.; August, 2½d.; September, 2½d.; October-December, 2½d.

SARSAPARILLA.—Grey Jamaica is quoted at about 1s. 10d. to 1s. 11d. per lb. Native, mixed colours, 1s. 1d. to 1s. 2d. per lb.

**SEEDS.**—**ANISE.**—Spanish, 51s. 6d.; Turkish, 34s.; and Russian, 36s. per cwt., on spot. **CANARY.**—Spot, Mazagan sold at 1s. 9d.; Tangier, 14s. 3d.; Kenitra, 14s. LINSEED.—Spot, Mazagan, 18s. 3d.; Morocco, 12s.; Plate recleaned, 12s. 6d. **CORIANDER.**—1929 crop, 16s.; wormy, 18s. 6d. to 14s.; shipment, position firmer; new crop quoted at 16s. c.i.f. **CUMIN.**—Morocco, spot, offering at 38s.; 30s. quoted for shipment. **FENUGREEK.**—Morocco, 13s., spot, and 10s. 6d. c.i.f. for shipment. **CARAWAY.**—Dutch, 31s. 6d. to 31s. 9d., spot, duty paid. **MUSTARD.**—English, 20s. to 30s. per cwt., according to quality.

**SENEGA.**—Prices have again sharply advanced, in some cases over 6d. per lb. There is a great variance in quotations, and some shippers quote both spot and c.i.f. up to 2s. 1d. per lb. There are, however, some cheaper second-hand sellers below this price. When it is recalled that only a few weeks ago the price stood at around 1s. 3d. per lb. c.i.f., it will be appreciated how sharp the advance has been.

**SENNA.**—Alexandrian pods continue quiet, and finest hand-picked are meeting with little demand. Manufacturing pods, however, are now being inquired for and are selling at between 4½d. to 5d. per lb., according to quality. Tinnevelly: the position is very firm, with a steady demand for the better grades of leaves. Hand-picked pods still continue firm, and holders are now asking up to 7d. per lb. The position as regards shipment still remains unchanged, and several cabled orders have recently been refused on account of the absence of supplies at primary source.

**SHELLAC** is firmer: spot, standard TN orange, 66s.; fine orange, 80s. to 145s.; pure button, 82s. 6d. per cwt. For delivery, TN October, 59s.; December, 59s. For arrival, TN, sellers. September-October, 56s. per cwt. c.i.f.

**SQUILL.**—New crop, best white, is quoted at about 25s. per cwt., duty paid.

**VALERIAN ROOT** is in steady demand and selling at previous rates of 45s. per cwt.

**WAX (VARIOUS).**—These markets have been generally quiet, but quoted prices are about level on the week. **CARNAUBA**, fatty grey and chalky grey, is steady at 85s.; medium yellow, steady, 140s.; fine yellow, 145s. **CANDELILLA** is lower at 75s. per cwt. **SPERMACETI**, steady at 9½d. per lb., spot. **PARAFFIN** is about steady from 22s. 6d. to 50s. per cwt., as to melting point. **CERESIN** is quoted from 35s. to 80s. per cwt., as to colour and melting point. **BEE'S** is about steady, with the market quiet; bleached, discs, £7 10s.; slabs, £7 5s.; yellow refined, £5 12s. 6d.; yellow crude, 97s. 6d. per cwt., spot.

#### Essential Oils, etc.

THE general tone of the market is quietly firm, and a moderate business is passing. Citronella, Java and Ceylon are firm. Lemongrass is dearer. American peppermint oil is dearer for shipment.

ALMOND remains at last week's prices of about 7s. 6d. per lb. for s.a.p.; sweet almond, about 2s. per lb.

**ANISE (STAR).**—Spot is unchanged, but shipment shows an advance: spot, "Red Ship," in leads, 2s.; in tins, 1s. 10d.; in drums, 1s. 9d.; shipment, in leads, 1s. 8d.; in tins, 1s. 7½d.; in drums, 1s. 6½d. per lb. c.i.f.

BERGAMOT is quoted by the Consortium at about 9s. 6d. per lb.

BOIS DE ROSE.—The market is dull, and last week's prices might be a shade less for Brazilian. Cayenne is scarce on spot at 9s. 3d. to 9s. 6d. per lb.

CARAWAY remains quiet, with Continental twice rectified, 8s. to 8s. 4d. per lb., and slightly less for large bulk quantities.

CASSIA.—Spot remains steady at 3s. 9d. to 3s. 10d. per lb.; shipment, 3s. 1½d. per lb. c.i.f.

CEDARWOOD is about unchanged and in small demand: spot, bulk quantities, 1s. 10d. per lb., and up to 2s. for small lots.

CINNAMON LEAF is unchanged with spot about 3s. 3d. to 3s. 6d. per lb. as to quantity.

CITRONELLA.—Ceylon citronella is firmer: nominal quotation forward, 1s. 9½d. per lb. c.i.f. Spot is scarce and is quoted nominally at 1s. 10d. to 2s. Java is very firm in all positions; spot is difficult to find at 2s. 10½d. Shipment prices are irregular.

CLOVE is unchanged at 4s. 4d. to 4s. 6d. per lb. as to quantity for English 85 to 90 per cent. Madagascar, spot, about 3s. 9d., and shipment about 2s. 10d. per lb. c.i.f.

EUCALYPTUS remains unchanged. Spanish, 70 to 75 per cent., 1s. 2d.; Australian, 70 to 75 per cent., 1s. to 1s. 0½d.; 80 to 85 per cent., 1s. 1d. to 1s. 1½d. per lb., and slightly less for bulk quantities.

GERANIUM continues quiet: spot, Bourbon, about 25s. per lb. Algerian, spot, about 24s. 6d. per lb.

LAVENDER.—Shipment quotations for good brands of new crop are round about 9s. to 9s. 6d. per lb. c.i.f.

LEMON.—The market is quiet and unchanged: Sicilian, hand-pressed, on spot, about 4s. 3d. to 5s. 6d. per lb. Shipment, about 4s. 2d. to 5s. per lb. c.i.f. Californian, spot, 57 cents per lb., in drums.

LEMONGRASS is firmer: spot, about 2s.; shipment, about 1s. 10½d. per lb. c.i.f.

LIME.—The spot price for genuine West Indian distilled is about 35s. per lb.

MANDARIN shows no change, with spot quoted at 16s. per lb. for small quantities.

ORANGE remains very steady: Sicilian sweet, spot, 7s. 3d. to 7s. 6d.; shipment, 6s. 3d. to 6s. 4d. per lb. c.i.f. West Indian, hand-pressed, 5s. 6d. per lb. c.i.f. French Colonial, 5s. 9d. per lb. c.i.f. Californian, spot, 80 to 90 cents per lb. as to quantity.

PEPPERMINT.—Japanese dementhrolised is quoted on spot at 3s. 10d. per lb. Shipment, August, 3s. 3d.; September, 3s. 2d.; October-December, 3s. per lb. c.i.f. American oil is dearer for shipment at 1 dollar 75 cents per lb. c.i.f.

PETITGRAIN remains steady: spot, 4s. 3d. to 4s. 4d. per lb.

ROSEMARY.—Spanish, spot, about 1s. 9d. to 1s. 10d. per lb., as to quantity; shipment, about 1s. 5½d. per lb. c.i.f.

WORMSEED is firm with spot about 9s. 3d. to 9s. 6d. per lb. as to quantity.

#### California Orange and Lemon Oils

THE Bureau of Chemistry and Soils of the United States Department of Agriculture has issued Technical Bulletin 241 containing the result of analyses of California lemon and orange oils made by H. D. Poore, of the research staff. Over a period of four years seventy-three samples of lemon oil, sixty-three of Valencia orange and thirty-one of Washington navel orange obtained from commercial citrus by-products were analysed. The lemon oil was found to contain, in addition to *d*-limonene, which constitutes about 90 per cent. of the oil, *α*-pinene, *β*-pinene, citral, octyl and nonyl aldehydes, acetic, capric and caprylic acids, geraniol,  $\gamma$ -terpinene and bisabolene; a solid aldehyde melting at 58° C., a tertiary alcohol and a white amorphous compound melting at 71° C.; traces of linalool and cadinene. Practically the same substances were found in the orange oils; besides *d*-limonene, which constitutes about 90 per cent. of the oil, there were decyl aldehyde, formic, acetic, capric and caprylic acids, octyl alcohol, and olefin alcohol closely related to linalool, traces of linalool and an amorphous white compound melting at about 62° C.

#### Indian Cinchona Diseases

ACCORDING to a recent report of the Agricultural Research Institute at Pusa, four diseases of *Cinchona Ledgeriana* were under investigation at Mungpoo and Munsong cinchona plantations, viz., pink disease, bleeding disease and "stem rust," seedling disease in Munsong and seedling disease in Mungpoo. Pink disease caused by *Corticium salmonicolor* B. et Br. was found chiefly on the branches, but sometimes also on the main stem. Bleeding takes place on the stem and occasionally on the branches, and occurs chiefly in the hot weather about April. It is thought that nowadays the proportion of trees affected by this disease is high. In the case of the seedling disease at Munsong, it was found that on plants fifteen months old the upper leaves assume a dingy yellow hue, all the leaves become red and droop and the plant dies. The seedling disease at Mungpoo is of another character. In very hot weather, or when a nursery is over-watered, small patches of seedling die. From seedling got from Mungpoo a phytophthora was cultivated. There is no doubt about the fungus being parasitic under moist conditions in seedling plants. Great care is exercised during the whole course of their year in the nurseries to keep the seedlings in the correct conditions of moisture, in order to prevent their dying, and nothing better than standard practice can be suggested against this fungus.

# Correspondence

Letters should be written on one side of the paper only. Correspondents may adopt an assumed name, but must in all cases furnish their real name and address to the Editor.

## Flies on Horses

SIR.—In a recent letter which was sent to the Press by the Royal Society for the Prevention of Cruelty to Animals with regard to a solution which could be smeared over the parts of horses usually attacked by flies, owing to a misprint the following recipe was given, which could be obtained from chemists:—

Oil of rusci, one ounce.  
Oil of white birch, one ounce.  
Oil of tartar (rectified), one ounce.  
Train oil, three ounces.

Mix.

This, of course, should have read:—

Oil of rusci or oil of white birch, one ounce.  
Oil of tar (rectified), one ounce.  
Train oil, three ounces.

Mix.

As you will appreciate, this has led to a little confusion, and I should be grateful if you could find space in your columns to make this matter clear. We have since decided that 5 oz. of linseed oil is a suitable substitute for train oil, and is more easily obtained.

Yours faithfully,

E. G. FAIRHOLME, Captain.

London, S.W.1.

## Cheap Photographic Prints

SIR.—I sympathise with "Mancunian" (*C. & D.*, August 6, p. 147) in his remarks on the price cutting of D. and P. It has been more prevalent this summer, probably owing to the general drop in trade and the desire of some dealers to attract more custom by quoting cheaper rates. Naturally they have to do more work, or to do it in a cheaper manner and therefore not so well, if they are to keep up their returns and profits. Not only is this price cutting done directly by charging 1½d. for prints instead of the recognised scale of 2d., but it is done indirectly by giving free postcard enlargements for returned wallets, developing films for nothing when brought back to the shop they were purchased from, processing one spool of film free to new customers, and various other devices. So far there has been no effectual means found for stopping this. But with all these still customers who are willing to pay the accepted prices for good work, and I do not think that I have lost much. One or two have told me that they have tried places where the prices were lower, but they were not satisfied, and so came back to me again; and this sort of customer is more likely to do one good, as he will talk about his experience and recommend his friends to use one's D. and P. service. The cutter who does most harm to the trade is not the one who cuts D. and P. prices, but the one who cuts proprietary lines which cannot differ from one shop to another, and in the sale of which there is no particular service. For this there is only one explanation to give a customer, and it is one in which he would not be interested.—Yours faithfully,

LIST PRICE (12/8).

## Filling in Spare Time

SIR.—Every pharmacist should cultivate some hobby outside his calling. Pharmacy in its general conduct takes so much out of the individual in the way of long hours and cautious attention to never-ending details that it is an essential to his good health and well-being to get thoroughly out of himself and his calling whenever possible. What this recreation should be is a personal matter, but it must be recreative. It is well to take up something which brings the pharmacist into contact with phases of life that may possibly be of business

profit. This is not a selfish motive. Country pharmacists will find economic botany useful in dealing with farm pests, whereas the town pharmacist may find equal advantage in cultivating economic microscopy, particularly if he can join a microscopical society. The "bookish" pharmacist may go as far as he has a mind into the domains of literature (English, foreign or classical), and he will find many customers who will share the joys of language amid the routine of the counter. The admirable paper by Miss Hindes on "Old York" in the *C. & D.* of August 13 is an example of how much can be done in local history and archaeology without going far afield; and though every area has not the fullness of York, there is not a patch so small that it does not carry some phase of local interest. Parish maps or surveys can yield much historical material.—Yours, etc.,

ANTIQUUS (16/8).

## Delayed Payments

SIR.—In "The Times" recently many letters have appeared pointing out the delay that often occurs in payment of tradesmen's accounts, and how unfair it is to them. Unfortunately, the delay in payment of accounts is felt not only by tradesmen, but by people in many walks of life, and the chemical trade itself is by no means immune—in fact, the position has become worse since markets have been in favour of buyers. It is not unusual for firms of standing who have plenty of funds available to keep merchants waiting three, four and sometimes six months for payment of goods for which the merchant has to pay cash, and for which it is known that usual trade terms are customary. Applications for payment meet with no response. If the firms who treat merchants in this way realised that they were really financing their business at the expense of the merchants, they would perhaps see that they were acting in a way which they would agree was hardly commendable. If firms who are supplying wholesalers who treat them in this way would refuse to supply goods unless the customary trade terms of payment were adhered to, the position would soon right itself. Unfortunately, there are always firms who think they obtain an advantage over their competitors by allowing longer credit. If only the trade would act in unison, much could be done to better the trade as a whole.

Your obedient servant,

MERCHANT (15/8).

## Field Botany

SIR.—One always reads "Xrayser" with interest. His remarks in your issue of August 13 (p. 151) on field botany leave, however, the puzzle of the declining pharmaceutical interest in this subject (and in general botany) unsolved. It would be possible to make out a good case for the contention that pharmacy might well omit botany from its curriculum *in toto*. After all, an interest in the medicinal properties of plants is antiquated. It takes us back to mediæval days, when medicine was even more empirical than it is to-day; when the idea of active principles with definite chemical compositions had not been born. To-day, medicine concerns itself more and more with substances of known chemical formulae—and their source, whether botanical or mineral or laboratorial, is felt to be of minor importance. No longer does opium, for example, concern the doctor or the pharmacist, but only the manufacturer; our interest is in morphine, codeine, etc., and in their properties, chemical and physiological. Where chemistry has not yet investigated vegetable (and animal) substances, we are obliged, *pro tempore*, to cleave to empiricism—but our faces are set towards the goal of complete chemical understanding. Therefore chemistry, and not botany, forms the real scientific

basis of pharmacy, and it is thus possible to look forward with hope to the time when the tiresome subject of botany—"field" or otherwise—will be eliminated from the labours of the pharmaceutical student. No botany, much chemistry, and especially much more organic chemistry, should be the rule for future curricula.—Yours truly,

LEX (15/8).

### Education in Salesmanship

SIR.—The attack on modern methods of salesmanship by Dr. John Murray, reported in the *C. & D.* of August 13 (p. 167), was surely prompted by insufficient information upon what is being taught on this all-important subject—in this country, at all events. It is true that there are certain schools of salesmanship, usually to be found on the other side of the water, where "psychologising" is taught to a degree that might, when practised, be offensive. Thus, students are taught so to control the muscles of accommodation that they can use the "magnetic eye" and can fix their customers with a steady stare. Again, they are instructed to see that their customers are seated upon low chairs, whilst they "dominate" them by standing on a slightly raised position, thus accentuating the relative positions of the heads of customer and salesman. These methods are not British. The good doctor says that "it is the quality of the goods which sell them." Precisely, but that quality is not always evident on the surface; and it is the duty of the salesman to draw attention to those points where quality is to be found, when not obvious to the eye. He must have struck salesmen who have been badly trained and whose speech and methods of attack betrayed them. It is more than likely that the "decent, honest persons . . . with the ordinary good manners that come from nature and education" were trained salesmen, for it is the function of such men so to handle every customer that he gets exactly that impression. There is a lot of nonsense talked about salesmanship to-day, but the world wants more of it, if the goods which are being produced in such quantities are to be sold.

I am, etc.,

SALESMAN (15/8).

### Subscribers' Symposium

For interchange of opinion among "C. & D." readers and brief notes on business and practical topics.

#### Shop Suggestions

After half a century's experience, I wonder why chip willow boxes are still listed under "town and "country" measurements; why not have one designation, viz., actual capacity? Why are sponges still sold sanded? Why is potass. chloras, difficult to dissolve and nauseous, still used for gargles, etc., instead of the readily soluble and much nicer sodium chlorate? For serving glycerin, liquid paraffin and various oils could not a standard brass spout about three inches long be used?—Canuck (9/8).

#### Wormwood

An interesting study upon one feature of medicine would apply to our native curative plants. Any investigator may be assured of a research full of interest—scientific, medical and human—for faith in "th' yarbs" as remedial agents is still widespread, and in many cases with just reason. Such an instance is wormwood, growing extensively on waste patches of ground, particularly in estuarine locations. It is a vigorous plant, and when in clumps is an easy prey for the wandering collector of herbs, who, in not a few instances I have known, is a keen observer of plant habits. Wormwood is in the South widely used as a bitter tonic, occasionally as a febrifuge combined with tansy, as an insect powder when crushed, and as a constituent of absinthe.—Antiquus (29/12).

### Legal Queries

*Script* (31/5).—The Dangerous Drugs (Consolidation) Regulations, 1928, stipulate that the prescription must "be in writing and signed by the person giving it with his usual signature and dated by him." If anyone else writes out the prescription for the doctor, and the doctor signs it, it is the doctor's prescription. In all these cases, providing the necessary details are given and the doctor signs the prescription, he assumes responsibility and the prescription is in order.

*C. F. P.* (23/7).—Known, admitted and approved "remedies may only be sold unstamped by chemists and exempted persons. When sold by other vendors to whom this exemption does not extend such articles must be duly stamped. Licensed vendors may break open a stamped box of pills, powders, tablets, or other solid medicines apportioned into doses, and sell the contents in small quantities unstamped, provided they are not re-packed, but sold loose or in a twist of paper.

*W. F.* (23/7).—We are afraid that you will be unable to obtain any financial assistance in purchasing a business unless you can offer some security. It is possible to obtain advances on a life policy, but the amount you would probably require would necessitate a heavy annual premium; moreover, the policy would be of little value for some years to come, and therefore of no use for your immediate purpose. The only possible way is to be able to put some cash down for the purchase of the business and take out a mortgage on the balance, but this would not help you to purchase stock and goodwill.

### Miscellaneous Inquiries

When samples are sent particulars should be supplied to us as to their origin, what they are, what they are used for, and how. We do not undertake to analyse and report upon proprietary articles nor to publish supposed formulas for them.

*C. T. B.* (20/8).—CALENDULATED BORIC ACID.—This is made by triturating boric acid with sufficient tincture of calendula to produce a rich cream tint. The spirit is then allowed to evaporate and the powder passed through a fine sieve.

*S. C. L.* (30/4).—BOIL REMEDY.—This is described as a home-made remedy for boils. It is a sherry-coloured aqueous liquid; its specific gravity is a trifle under unity, whence it may contain a little alcohol. It yields 1.5 per cent. of total solids, and 0.2 per cent. of ash. It has the characters of a vegetable extract, slightly acid in reaction, and giving no coloration with ferric chloride. It might well have been made from belladonna root, but this suggestion was not confirmed by any positive tests.

### Retrospect of Fifty Years Ago

Reprinted from  
"The Chemist and Druggist," August 15, 1882

#### The Endowment of Research

It is quite clear that no amount of endowment of elementary education, and no mere extension of, or improvement in, technological training, will suffice to keep any class of specialists in a foremost position: where training ends original research must begin, if we are to lead our own department of knowledge into new and wider fields. . . . The British inventor is in a dilemma. Be the value of his invention never so well demonstrated, it will fail, unless backed up by the adoption of so-called practical men. . . . The benevolence either of societies or of true patrons of science is to be gratefully acknowledged, and by all means to be encouraged.

AUGUST 20, 1932

THE CHEMIST AND DRUGGIST  
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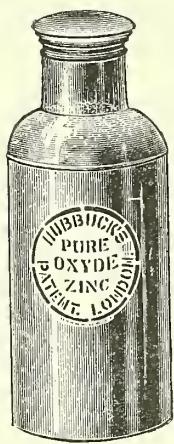
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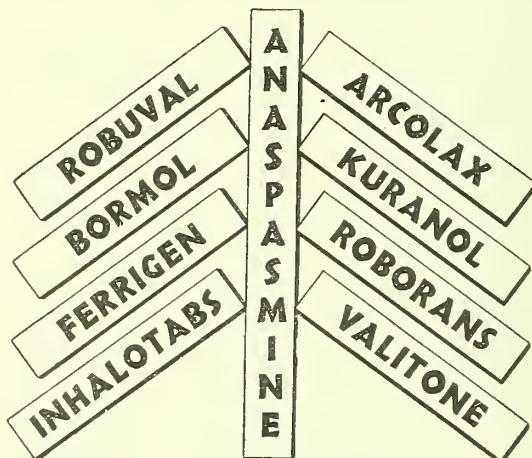
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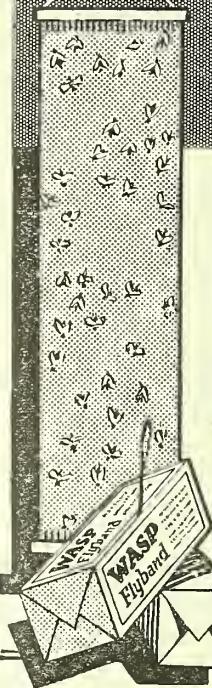
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The Scholl Mfg. Co., Ltd., has, during many years of experience, gathered abundant evidence to show that one way by which the enterprising Chemist can raise himself above competition is to specialise on Foot Comfort Service. The logical extension of this service is to include Chiropody.

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Firstly in securing a Qualified Chiropodist whose training will also embrace a study of mechanical foot correction, massage, heat and light treatments—all most profitable aspects of Chiropody Service.

Secondly in advising and assisting you with the installation and equipment of your Chiropody Department.

***Write for details—no obligation—to***

**THE SCHOLL MFG. CO., LTD.**

**188-194, St. John St., London, E.C.1**

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RELIABLE  
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YOU WILL BE ASKED FOR **BAR-KOR**

An Old Remedy, under a New Name, for Hard Skin, &c.  
1 doz. 4d. boxes on card 2/3, 3 cards 6/4, 6 cards 12/-

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**SANITARY TOWELS**

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The ORIGINAL and Most Popular

The "K." All wool in knitted cover,  
very soft.

The "CELTEX." Made of Cellulose  
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FROM YOUR WHOLESALE HOUSE, PLEASE

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1d. POPULAR Size. $\frac{1}{2}$ doz. Packets at	9 9	4 10 $\frac{1}{2}$	6 0
1 $\frac{1}{2}$ d. MEDIUM " $\frac{1}{2}$ doz. "	13 6	4 6	6 0
2d. LARGE " $\frac{1}{2}$ doz. "	18 0	3 0	4 0

**SOLUBLE LADIES' TOWELS**

	(with Loop or Tab Ends).	Cost	Selling Price.
	s. d.	s. d.	s. d.
1/- POPULAR Size. $\frac{1}{2}$ doz. Cartons at	8 9	1 5 $\frac{1}{2}$	2 0
6d. POPULAR " $\frac{1}{2}$ doz. "	4 6	1 6	2 0
1/3 MEDIUM " $\frac{1}{2}$ doz. "	11 0	3 8	5 0
6d. MEDIUM " $\frac{1}{2}$ doz. "	4 6	2 3	3 0
1/6 LARGE " $\frac{1}{2}$ doz. "	13 6	4 6	6 0
6d. LARGE " $\frac{1}{2}$ doz. "	4 6	2 3	3 0

**STANDARD LADIES' TOWELS**

	(De Luxe Cotton Wool).	Cost	Selling Price.
	s. d.	s. d.	s. d.
1/- Size 0. $\frac{1}{2}$ doz. Packets at	8 9	1 5 $\frac{1}{2}$	2 0
6d. " $\frac{1}{2}$ doz. "	4 6	1 6	2 0
1/2 " 1. $\frac{1}{2}$ doz. "	10 4	2 7	3 6
6d. " 1. $\frac{1}{2}$ doz. "	4 6	2 3	3 0
1/6 " 2. $\frac{1}{2}$ doz. "	13 6	3 4 $\frac{1}{2}$	4 6
6d. " 2. $\frac{1}{2}$ doz. "	4 6	2 3	3 0
2/- " 3. $\frac{1}{2}$ doz. "	17 7	2 11	4 0
2/- " 4. $\frac{1}{2}$ doz. "	19 9	1 8	2 3
		45 8	60 9
FREE BONUS (1 doz. any 6d. Size or assorted)			6 0
Less 2 $\frac{1}{2}$ per cent.		1 2	
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If you cannot afford the outlay of 44/6 necessary to gain the one dozen 6d. size bonus, we specially offer you:— $\frac{1}{2}$  dozen 6d. size Free with 25/- order,  $\frac{1}{2}$  dozen 6d. size Free with 15/- order, but cash must accompany these smaller orders.

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## QUININE PESSARIES



15/-

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Avoid Imitations and see the No. 332117 on each box.

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They are of Highest Quality and Packed Hygienically.

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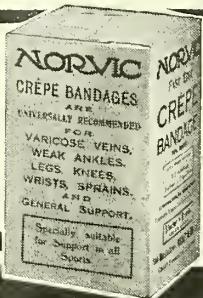
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**CRÊPE BANDAGES**

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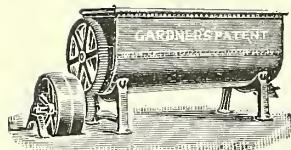
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Retail price 4/6 each.  
Nickel plated and beautifully made.

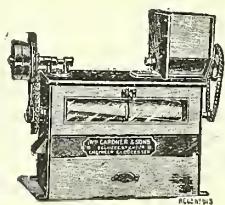
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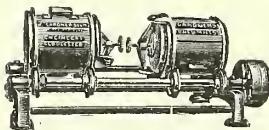
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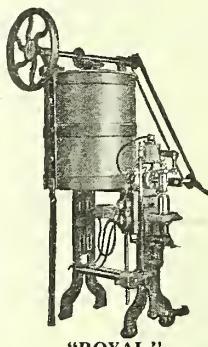
Telephone: 2288 (2 lines).  
Telegrams: "Gardner, Gloucester."  
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**6 and 8 oz.**

N.H.I. 5d. per gr.

Ordinary 8¾d. "

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Finest 1/8d. "

10 gross carriage paid.

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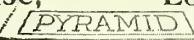
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1 doz. Rolls: - 1 doz. Packets:  
1 Cut-out: 100 "Personal Hygiene" Leaflets  
Cash 16/6 should accompany every order.

Please send me/us your Trial  
Parcel and Display Material for  
which cash value 16/6 is enclosed

Date

ATTACH YOUR LABEL  
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These Machines make one size Pill. By means of extra Plates and Rollers any size of Pill can be made.

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Power Tablet Compressing Machines, Coaters, Complete Pill Plants, End Runner Mills for Ointments, Linseed Grinding Mills, Tincture Presses, Emulsifying Machines, Percolators, &c., Mixing and Kneading Machines, Drying Ovens, Hand Pill Machines.

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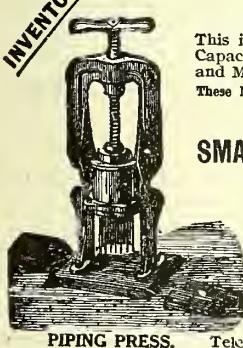
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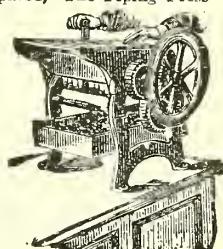
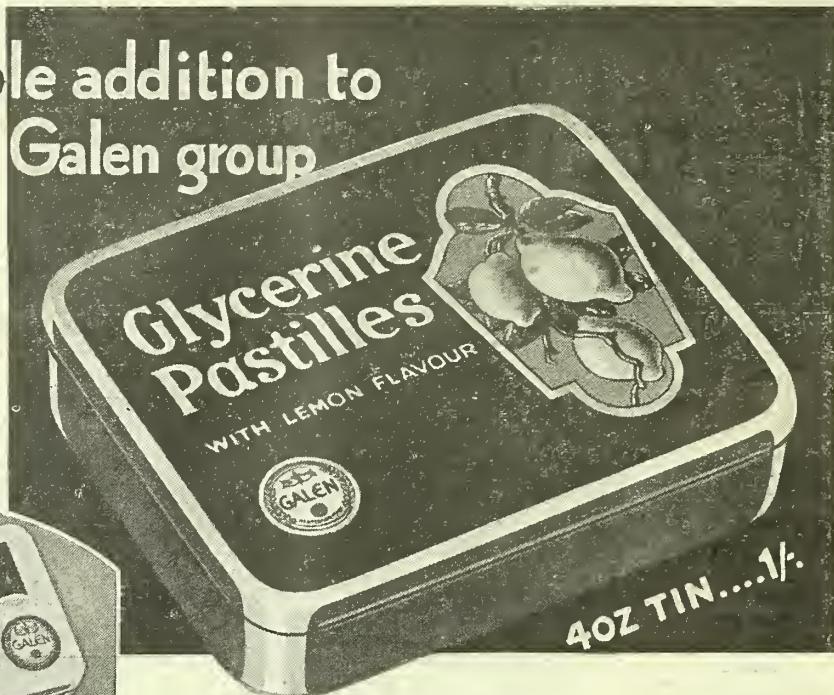


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Analgesic, Antipyretic,  
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1 oz. bottles Powder 1/6, 18/- per lb.

**"ELIXIR BROMO-VALERIAN CO."**

Useful for functional nervous  
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trolling epileptic seizures.

Price 5/- per lb.

# THE CHEMIST AND DRUGGIST

## SUPPLEMENT

28 ESSEX ST.  
LONDON, W.C.2

AUGUST 20, 1932

*This Supplement is inserted in every copy of The Chemist & Druggist.*

### THE CHEMIST AND DRUGGIST SUPPLEMENT

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2.—ACTON.—Cash Retail Business, with N.H.I. Dispensing; returns approximately £1,000 per annum; net profit over £300; house sub-let to more than cover rent and rates; price £550, or near offer.

3.—NORTHERN SUBURB.—General Retail Business, with National Health Insurance Dispensing; returns approximately £3,000 per annum; good profits; rent £55 per annum; long lease; price £2,200; vendor going abroad.

4.—SOUTH KENSINGTON.—Middle-class Retail Business, with N.H.I. Dispensing and Kodak Agency; returns £20 per week; nice double-fronted shop, amply stocked; stock and fixtures worth about £450; rent £45; price £550, or near offer; genuine reason for sale.

5.—WALHAM GREEN.—General Retail Business, with N.H.I. and Kodak Agency; returns last financial year £1,856, under management; double-fronted lock-up corner shop; stock and fixtures about £650; rent £2 per week; held on lease; price asked £950, or valuation terms entertained.

6.—CITY OF LONDON (Death Vacancy).—Cash trade, with Kodak Agency; returns, under management, last year £3,939; gross profit £1,543; handsomely fitted shop with good working stock; price £2,250, or valuation terms entertained.

7.—MID-HAMPSHIRE.—Good-class Family Retail Business, with Kodak Agency and small Optical connection; established

50 years; returns about £2,500 per annum; gross profit 40 per cent.; net profit £550-£600; double-fronted shop, well fitted and fully stocked; excellent living accommodation; price £400, plus valuation of stock and fixtures.

8.—MIDLANDS.—Light Retail and Dispensing Business; returns last year exceeded £2,000 at good prices; audited accounts; double-fronted shop, well fitted and stocked; property may be purchased, or lease would be granted at moderate rental; price £1,250.

9.—WEST OF ENGLAND.—General Retail and Dispensing Business, with side line; returns £2,350; books audited; average net profit £500; large double-fronted shop, well fitted and stocked; terms; valuation of stock and fixtures, plus £500 for goodwill, about £1,500 in all; the property must also be purchased; existing mortgage can be taken over.

10.—GLOUCESTERSHIRE.—Good-class Retail and Dispensing Business. 5,000 private scripts per annum; returns last year £1,960; double-fronted shop, well fitted and stocked; rent £85; new lease; price asked £1,250, or near offer.

11.—EASTERN COUNTY (Rural District).—Very old-established Retail Business, with Kodak Agency and Wine Licence; returns about £1,400 per annum; spacious living accommodation, with large garden; lease would be granted at £60 per annum or property could be purchased; price £1,000.

12.—LONDON, N.W. (Good-class Suburb).—Good-class Retail and Dispensing Business, with Kodak Agency; returns last year over £3,300; double-fronted shop, very well fitted and stocked; stock and fixtures worth £1,400; price £2,000, to include book debts.

13.—METROLAND.—Very much neglected Business for Sale through continued ill-health; returns present rate £30 per week; have been considerably more; good profits; excellent living accommodation; offers invited.

**Chemists' Transfers, Valuations for Sale, Stocktaking & Probate**

SPECIAL TERMS FOR INCOME TAX VALUATIONS



1.—SOUTHAMPTON.—Sound progressive light Suburban business, entirely under manager; returns average £1,700, audited figures; modern, attractive pharmacy, in fine position; long lease; price £1,200, or valuation terms arranged; splendid chance for energetic proprietor.

2.—EASTERN COUNTY.—Middle-class Cash Business, easily worked, in populous suburb of busy town; returns £1,650; low rent; lock-up shop, well fitted and stocked; price £900.

3.—KENT.—Well-established Chemist-Optician Business; Chemist's returns £30 weekly; Optical, £10 weekly; good profits; self-contained flat over; stock worth £560; price £950, or offer.

4.—SURREY (Banks of Thames).—Cash Drug and Photographic Store, in good position, and showing steady increase; returns last year £1,500; net profit £374; lock-up shop; stock worth £500; price £860.

5.—LONDON, W. (Few Miles Out).—Light Cash Retail, in main road position; returns £30 week; scope for increase; owner retiring; low rent; lock-up shop, fully stocked; price £800.

6.—NEW FOREST.—Select Family and Dispensing Business, charmingly situated and easily worked; turnover £1,600, increasing, excellent modern house, with large well-stocked garden, garage and ½ acre of land adjoining Forest; price for business and freehold property £3,850; suitable for anyone with capital seeking a pleasant country life.

7.—MIDLANDS.—Old-established Business in central position of busy market town; returns average over £1,450; plenty of scope; good house; same hands many years; price valuation, plus small goodwill.

8.—NORFOLK.—Good old-established Country Business in small market town; returns £1,500; net profit £300; assistant kept; rent £45; good house and nice garden; stock worth £600; price £850; worth attention.

9.—EDGWARE (Near).—Good-class Family and Dispensing Business in prominent position of good residential district; returns average £3,450; books audited; bold, attractive pharmacy; fully stocked; price £2,250, or near cash offer.

10.—VICTORIA PARK (Near).—Death vacancy. Profitable Cash Retail; no rear opposition; returns average £1,300; net profit £320; good house; rent £75, on lease; price £700.

### BUSINESSES WANTED.

We are in immediate want of several good businesses showing a turnover of £3000 upwards, private clients waiting with cash ready, strictest confidence guaranteed, correspondence cordially invited, personal interviews arranged if preferred

### Business Transfers, Valuations for Sale, Income Tax and Probate. LOWEST TERMS FOR STOCKTAKING.

## ERNEST J. GEORGE

Tel.: Ernest, Walsall.

CHEMISTS' BUSINESS SPECIALIST,  
VALUER, AND TRANSFER AGENT

Phone: Walsall 3774

TUDOR HOUSE, WALSALL

Phone: Museum 8340.

[London,

London Office : Sentinel House, Southampton Row, W.C.I. Grams: "Ernest" Ofiservis, Westcote,

(OPPOSITE KINGSWAY SUBWAY)

Quotations for stock taking or for pricing chemists' own stock records supplied on application.

(C1) LONDON, S.W.—Pharmacy with good optical connection, well situated on busy main road; exceptional opportunity for chemist-optician; present returns approximately £2,100 per annum; valuable freehold can also be acquired. (Visited and recommended.)

(C2) CUMBERLAND (TOWN BUSINESS).—Good retail business with extensive sales in toilet and photographic lines; average turnover approximately £1,800 per annum, with excellent scope for further increase; premises well situated; purchase price £1,050. (Awaiting visit.)

(C3) WARWICKSHIRE.—Pharmacy with good living accommodation, situated in growing district; average returns approximately £2,000 per annum; lease and rental by arrangement; purchase price by negotiation. (Visited and recommended.)

(C4) LONDON (NORTH).—Pharmacy with optical connection, at present doing approximately £25 weekly, with scope for considerable increase; good living accommodation, which could be sub-let wholly or in part; high percentage net profits; purchase price £950. (Visited and recommended.)

(C5) BIRMINGHAM (NEAR).—Good retail business with living accommodation; present returns approximately £30 weekly; rent, £65; purchase price by negotiation. (Visited and recommended.)

(C6) NORTH WORCESTERSHIRE.—Old-established business with optical connection, showing net profits upwards of £600 per annum; modern premises with self-contained flat; little booking; good N.H.I.; to a genuine purchaser with satisfactory references, the owner would be prepared to consider allowing part of the purchase price to remain over for a reasonable period on terms to be agreed upon. (Visited and recommended.)

(C7) WILTSHIRE.—Good class retail and dispensing business situated in semi-industrial market town; optical connection, well capable of further development; returns for last financial year, excluding optics, amounted to approximately £2,000; living accommodation available if required; reasonable rental; optical stock and fixtures can be taken or otherwise at option of purchaser. (Awaiting visit.)

(C8) HERTFORDSHIRE.—Good class retail business, at present doing approximately £30 to £32 weekly, and increasing; accountants' figures available; modernised premises (lock-up), well stocked and fitted; rent £60 per annum; further particulars in confidence to bona fide prospective purchasers. (Awaiting visit.)

(C9) HYDE PARK (NEAR).—Exceptional opportunity for chemist with approximately £450 capital to acquire a well-positioned and nicely-

fitted pharmacy showing present returns upwards of £1,850 per annum; the purchase price comprises the estimated value of stock only, and the overhead charges are reasonable; these and other circumstances can be explained at interview or by letter, upon application. (Visited and recommended.)

(C10) LONDON (OUTER NORTHERN SUBURB).—Old-established family and dispensing business, well situated in good class residential district; present returns £28—£30 weekly, with scope for further increase under personal proprietorship; good living accommodation available on premises, or pharmacy could be leased separately if desired; reasonable purchase price. (Visited and recommended.)

(C11) NORTH WALES.—Pharmacy well situated in prominent seaside resort, showing returns of approximately £40 weekly; should be capable of further increase; good reasons for disposing; purchase price, £1,150, or offer, which includes stock and fixtures estimated at £900. (Visited and recommended.)

(C12) LONDON (EAST).—Good retail business situated in busy main thoroughfare; present returns approximately £27 weekly, plus N.H.I. panel which averages about £40 per month; reason for disposal, owing to genuine ill-health of proprietor; excellent scope for further increase with personal interest and attention. (Awaiting visit.)

(C13) BUCKS.—Unique and exceptional opportunity to secure beautifully fitted, pharmacy situated in healthy residential district at a figure representing less than the estimated value of stock and fixtures; ideal proposition for chemist seeking semi-retirement; excellent modern flat on premises; good living obtainable; accountant's figures available to support returns, etc.; which at present amount to approximately £27 weekly; further particulars upon application. (Visited and recommended.)

(C14) LONDON, N.W.—Good dispensing and general retail pharmacy, well situated in busy thoroughfare, and ideally positioned near to busy panel practitioners; good living accommodation; returns for last financial year approximately £1,400, but there is undoubtedly scope for considerable increase over this amount; potential purchasers with about £650 capital can acquire this genuine business immediately; early application and investigation strongly advised. (Visited and recommended.)

(C15) SOUTHAMPTON.—Recently-established pharmacy and optical business, showing returns of approximately £20 weekly; good living accommodation; rent, £100, long lease; accountant's figures available; further details in confidence to genuine prospective purchasers. (Awaiting visit.)

It is requested that all correspondence relative to the sale or purchase of businesses be addressed to the London Office,

**S. F. CLARK, F.N.A.A.** Phone: Prospect 3366  
**CHEMISTS' VALUER & TRANSFER AGENT**  
**34 Marksbury Avenue, Richmond, Surrey**  
 Personally undertakes **STOCK-TAKING** and **VALUATIONS** for all purposes in all parts of the British Isles, at lowest fees. Absolute privacy guaranteed in all transactions.  
*Enquiries solicited.*

**BUSINESSES FOR DISPOSAL.**

6s. for 50 words or less; 6d. for every additional 10 words or less, prepaid. (Box No., 1s. extra.)

**L**ANCASHIRE COAST RESORT.—Valuable Business, old-established; good corner position; bright, well-fitted shop; good stock; busy season position and good steady winter trade; splendid house attached, with private entrance and garage; owner taking up Optics exclusively; price, including freehold property, £4,200. Apply "Optics," c/o Messrs. J. Thomson & Co., Ltd., Duke Street, Liverpool.

**L**EICESTER.—Old-established Chemists' Sundries, Perfumery and Toilet Business for Sale; extensive (own speciality) Cosmetic and Proprietary sales; smart, double-fronted shop in central commanding position near main station, tram and bus stops; good house; reasonable rent; expensively fitted; clean stock; suit qualified man; Kodak or Optics; £250. 39 Waterloo Street, Leicester.

**L**IVERPOOL.—Small old-established Chemist's Business for Sale in working-class area; shop and house in good condition, and good Panel; fixtures and goodwill £250; stock at valuation; genuine reasons for disposal. 255/36, Office of this Paper.

**L**ONDON, W.—Good-class Business, with living accommodation, recently opened in good shopping centre; foundations are laid for a really big turnover this winter; highest-class fittings. A low price will be accepted from young pharmacist with ambition and initiative for quick sale; would suit multiple concern. Particulars, 256/31, Office of this Paper.

**N**EAR LIVERPOOL.—Well-established Cash Retail Business, with Kodak Agency; double-fronted shop, in good shopping centre of pleasant suburb; excellent living accommodation, with every convenience; recently redecorated; rent £85; long lease; present turnover £20-£25 weekly; easily increased by live men, particularly one with Optical experience; price £850, or valuation terms; great sacrifice, owing to wife's health. 255/37, Office of this Paper.

**N**ORFOLK.—Owing to illness of owner a good profitable Business is for Sale; double-fronted shop, well fitted; rent and rates about 16s. weekly; turnover last year £1,200; scope for increase, especially in Optics. Apply 255/39, Office of this Paper.

**S**URREY (Few Miles from London).—Nicely-fitted Pharmacy for disposal; modern house; new property; established only one year; Kodak Agency; takings for July £82; lease will be granted, or property may be purchased on easy terms; price, fixtures and fittings £200, stock at valuation about £150. 256/6, Office of this Paper.

**S**USSEX COAST.—Branch Business for Sale; low rent; good lease; lock-up or living accommodation; gross profit for first year £250; accountant's figures. 256/36, Office of this Paper.

**B**RANCH Business for Sale in a good-class London suburb; large double-fronted shop, beautifully fitted; splendid main road position (bus and tram stop) and two minutes from station; fine opportunity for development under personal management. 257/3, Office of this Paper.

**C**HEMIST'S (Dispensing), Finchley, N.12; attractive main road Shop, with modern front and fittings for the business; 20 years' lease at £95 per annum; price £450; s.a.v.; lack of capital cause of sale. Lynn, 191/5 Piccadilly, W.1.

**L**OCK-UP Shop, Flat if required; situated in new district; good opening for Chemist wishing to build steady good-class business; plenty of scope for developments; Stationery; Library also carried on; no other chemist within one mile or more. Full particulars, E. Rule, 49 Oakley Avenue, Ealing, W.5. Acorn 2316.

**M**AIN Road Shop, South London, doing £30 weekly, exclusive of Optics; Kodak, N.H.I.; great scope for increase if money is spent on business; price £200; stock at value, about £250. 10 Godman Road, Rye Lane, S.E.15.

**The ASSOCIATION OF MANUFACTURING CHEMISTS,**  
 LIMITED  
**(Business Agency, Transfer & Valuation Department)**  
 KIMBERLEY HOUSE, and at EXCHANGE CHAMBERS,  
 Holborn Viaduct, LONDON, E.C.1 2 Bixteth St., LIVERPOOL  
**PARKIN S. BOOTH, Valuer.** Tele.: CITY 1261-2-3-4.  
**VALUATIONS. SALES OF BUSINESSES. STOCKTAKINGS.**  
*Enquiries Invited.*

**O**LD-ESTABLISHED middle-class Business, London, W.; improving locality; long lease; same hands 11 years; net profits £500; could do more; price £950; would suit lady or gentleman. Apply Cooper's Studios, 35 High Street, Harrow-on-the-Hill.

**P**ROFITABLE Lock-up Pharmacy in Eastern Counties; established ten years; returns for last five years average of £200 weekly; rent £35 per annum (lease); rates £11 yearly; main road; could be easily worked with an apprentice; genuine reason for disposal; price £550 inclusive. Write 256/32, Office of this Paper.

**R**ESIDENTIAL SUBURB (West of England City).—High-class Dispensing, Family and Photographic Business; illness cause of sale; lock-up shop; opening and apparatus for Optics; price £1,000 for fixtures, goodwill, shop utensils, etc.; stock at valuation. "Larynx," 255/34, Office of this Paper.

**£30.** —CHEMIST'S Shop Fixtures for Sale; London, S.E. suburb; lock-up; agreement can be had; goodwill and possession for further small sum; vendor removing stock to larger business; trade created; opportunity for N.H.I. Reply by letter in first instance to "Dulcis," c/o P.C.B. 45/20, Office of this Paper.

**£140** ALL AT (includes stock £50, and fixtures, etc., £60). —Lock-up Shop in densely populated working-class district of London, S.W.; main road position; rent £52 year (inclusive); electric light and gas; average trade £14 per week, plus N.H.I., £10 per month. Apply 257/21, Office of this Paper.

**BUSINESSES WANTED.**

6s. for 50 words or less; 6d. for every additional 10 words or less, prepaid. (Box No., 1s. extra.)

**C**HEMIST wishes to purchase small Business, capable of increase under personal supervision; South of England preferred, but not essential. Particulars in strictest confidence to 255/10, Office of this Paper.

**C**HEMIST would like to hear of Business for Sale, turnover £2,500 upwards; capital available £3,000; now free to interview; banker's reference will be sent in first instance; strict privacy will be observed. Write "Pharmacist," Bursley, Scarsdale Avenue, Allestree, Derby.

**E**RNEST J. GEORGE, Sentinel House, Southampton Row, E. London, W.C.1 (telephone Museum 8340), is in a position to negotiate immediately on behalf of a private client with capital up to £8,000, for the purchase of a sound Business of the right size and type in any part of England. Will interested prospective vendors please write in confidence, and if likely to be suitable, an early visit will be arranged. Direct private introduction effected if preferred.

**A**N established limited company require immediately for purposes of amalgamation, about 20 sound Businesses within a 20-mile radius of London; owners of businesses showing returns of £35 weekly and upwards, where the overhead charges are reasonable, and who for any reason are contemplating removal, are invited to communicate privately with Ernest J. George, as above. All information will be treated as strictly confidential, and an early visit arranged in order to discuss the matter in detail.

**W**ANTED, unoccupied Country Business; good house and garden essential; electric light, water and main drainage; purchase freehold. Fullest particulars to 149 Nutgrove Road, St. Helens.

**APPRENTICES.**

**A**PPRENTICESHIP of one year required to take Major examination in 1933; shop or hospital; have had three years' College Dispensing training. Miss Hartis, 304 Mile End Road, E.

## PREMISES TO LET.

**DEAL.**—In High Street, double-fronted shop premises, with good living accommodation, bathroom, electric light and gas; entirely rebuilt and redecorated; excellent opening for qualified Chemist and Optician, with Photographic sundries; to be let on lease, £75 per annum to suitable tenant. Apply Thwaites (owner), 204 High Street, Deal.

**TO LET,** new Shops, Bishop's Read, near Paddington Station; £120-£150 exclusive. Apply, Surveyor, G.W.R., 153 Westbourne Terrace, W.2.

## BUSINESS OPPORTUNITIES.

**BOBSWORTH.** 84 and 86 Watling Avenue, Burnt Oak, Middlesex, invite manufacturers' representatives to call with reference to lines to sell at 1s. only. Buying Office, No. 92.

**SURGICAL INSTRUMENT MANUFACTURER.**—Unique opportunity to share a large, modern, up-to-date fitted Shop with West-End Optician, situated in a well-known thoroughfare, 3 minutes from Harley and Wimpole Streets; moderate terms. No agents. 256/4, Office of this Paper.

## PATENTS.

**A MEDICAL COMPOUND AND PROCESS OF PRODUCING SAME.**—The Proprietors of British Patent No. 317,713 desire to arrange for the commercial working of this patent by sale outright or by licences granted on participating and reasonable terms. Particulars obtainable from Technical Records, Ltd., 59-60 Lincoln's Inn Fields, London, W.C.2.

## APARTMENTS.

**RESIDENTIAL CLUB FOR GENTLEMEN.**  
**HAMPDEN CLUB,** Hampden Street, N.W.1, close to King's Cross Station. Large club rooms. 300 bedrooms and bed-sitting rooms, 15s. to 25s. per week. Illustrated Prospectus, Secretary. Museum 3424.

## SITUATIONS OPEN.

### RETAIL (HOME).

6s. for 40 words or less; 6d. for every additional 10 words or less, prepaid. (Box No., 1s. extra.)

**P. RHOSER ROBERTS, LTD.**, Poplar Walk, Croydon, beg to thank the numerous applicants for their vacancy, which is now filled. Those desirous of the return of their photos and testimonials please send stamped envelope for same.

**BIRMINGHAM.**—Qualified Manager required; must be smart Counterman and good Window-dresser, used to N.H.I.; modern house attached; salary and commission with good prospects. Give full details of age, previous experience and when free (also salary required), to 208/453, Office of this Paper.

**CHELMSFORD.**—Qualified Manager required; must be smart Counter for branch shop; age between 25-45; main street living accommodation; must be quick Counterman and Dispenser, good Window-dresser. Apply, giving full particulars as to age, experience, references, salary expected, photo if possible (to be returned), to T. Bellamy, Pharmaceutical Chemist, 2 Tindal Square, Chelmsford.

**JERSEY.**—F. G. de Faye, Ltd., Chemists, require a young unqualified Assistant for the winter months, middle September to April, for high-class business, Prescriptions and Counter work. State age, height, salary required, references, photograph, to Manager, C. B. de Faye, 21 David Place, St. Helier, Jersey, Channel Isles.

**LIVERPOOL.**—Assistant-Manager, qualified, for city business; good Window-dresser essential, with knowledge of Photography. State age, experience, height, salary required and references. Banners, Ltd., 29 North John Street.

**LONDON, W.10.**—Wanted soon, a young unqualified Assistant for Counter, Dispensing, Window-dressing, etc.; good medium-class business; please give full particulars of age, experience, etc., and salary required. Applications not answered in seven days declined with thanks. J. R. Faulkner, 173 Ladbrooke Grove.

**LONDON.**—Qualified, for good-class Dispensing Business; state age, and recent experience; commencing salary £4 10s. outdoors; no photos or returnable testimonials. 255/8, Office of this Paper.

**LONDON, S.W.**—Wanted, young lady Assistant, age about 22 years, with some knowledge of Surgical Appliances and the fitting of Elastic Stockings. Write, stating age and salary required, to Box 703, Sells Advertising Offices, Fleet Street, E.C.4.

**MIDLANDS.**—Qualified Manager required for modern Family business in residential suburb of large Midland town; must be good Window-dresser and smart and tactful Salesmen; house attached; salary and commission. State full particulars of age, previous experience, salary required, and when at liberty, to 208/454, Office of this Paper.

**NORTH WALES.**—Thoroughly conscientious Qualified Branch Manager wanted October 1 for established business doing local and holiday trade. The vacancy calls for one able to speak Welsh, of pleasing personality, willing, competent, energetic and keen; age about 35. The salary will be reasonable, but not large in the beginning. Please give full particulars of previous experience, if married, salary required, etc., enclose recent snap if available. 256/25, Office of this Paper.

**SOUTH WALES.**—Wanted, a reliable Senior Assistant, with an Optical qualification; must be a capable Window-dresser and have a pleasing personality; permanency for suitable applicant. Apply, giving full particulars and salary required, to Melville Thomas, Chemist, Neath.

**SUSSEX COAST.**—Branch Manager required; salary and commission; family business. Only young men need apply. State experience, salary required, etc. 256/360, Office of this Paper.

**TORQUAY.**—Smart qualified Manager required for high-class Dispensing business; a gentleman of personality and all-round ability essential; give full particulars of age, previous experience, height, when at liberty, and salary desired, enclose recent photograph. "Torquay," 208/458, Office of this Paper.

**A COMPETENT** Assistant (qualified or unqualified) in a Family, Retail and Dispensing Business; must be capable, all-round, good Window-dresser, of good appearance and address. Give full particulars age, references, experience, salary (outdoors). Alban Atkin, 243 West End Lane, Hampstead.

**A SSISTANT**, not over 30, mainly for Counter and Stockroom in first-class business; no N.H.I.; male. Experience, references and salary required to Donald McKinnell, Ltd., Pharmacists, Northampton.

**A SSISTANT**, unqualified, English, about 30, required end September, for progressive pharmacy in rural Gloucestershire; must be expert Window-dresser, tactful and clever Salesman, accurate and careful Dispenser, and possessed of pleasing personality. Only those claiming to have these qualities are invited to apply, enclosing photograph (which will not be returned), usual references, if married or single, height, and salary expected. Replies unanswered seven days respectfully declined. 257/15, Office of this Paper.

**A SSISTANT**, unqualified, for Midland Spa town; Salesman ship more essential than technical ability. State age, experience and salary required. 208/460, Office of this Paper.

**DISPENSER.**—Gentleman required in private surgery in London; junior entertained; quick and reliable. Particulars to 257/26, Office of this Paper.

**JUNIOR** Assistant (male) required on September 12; one having completed good apprenticeship, with practical knowledge of Dispensing, superior Counter trade, Photography and Veterinary requirements, the latter desirable but not imperative. Reply, stating age, height, experience and where gained, salary required (enclosing photo, if possible), to Managing Director, Stone & Son, Ltd., Chemists, Exeter.

**L OCUM**, qualified, for one month. State salary required to Robinson, 69 Golder's Green Road, N.W.11.

**O PPORTUNITY** occurs for a Qualified Assistant as Superintendent with a Limited Company; must be prepared to invest £100 in shares with the Company as security and accept moderate salary for services; age no object. All particulars to "Chemicus," 256/34, Office of this Paper.

**PART-TIME.**—A married Assistant required, with good-class experience, for light evening duty; a four-room flat. Apply to Messrs. Amoore & Co., 173 Sloane Street, S.W.

**QUALIFIED** Locum wanted from Friday, August 26, to Saturday, September 3, inclusive. Apply Pope, Chemist, 8 Pen-nine Parade, London, N.W.2. Phone: Gladstone 1894.

**QUALIFIED** Lady and Gentleman Locums required (gentleman for Southsea business, to live in), September 25 to October 8 inclusive. Apply, giving full particulars of references and terms, to Reddall, Chemist, Lee-on-the-Solent.

**REQUIRED**, energetic qualified Manager; must be capable business builder; take charge of branch shop in a chain affording advantages of security, combined purchasing and enhanced profits; prospects promotion; salary, bonus and dividends on investment £500 10 per cent. preference shares. P.C.B. 45/210, Office of this Paper.

**RETAIL** Chemists with two branches (also Manufacturing), having own Beauty Specialities, require additional capital; position available for qualified Chemist as Branch Manager or gentleman experienced in Advertising and Mail Order work; investment £1,200; salary £5 per week, plus share of profits. P.C.B. 45/21, Office of this Paper.

**REQUIRED**, early September, permanency, young, hard-working male unqualified Assistant, of good appearance, not over 23; must be courteous Counterman, experienced Window and Display Dresser, for high-class trade in Channel Islands. Write, enclosing photo, references, wages required, to 256/3, Office of this Paper.

**UNQUALIFIED** Assistant (male) wanted; experienced Herbalist, also Surgical goods (no Dispensing required). State age and salary required by letter to 255/6, Office of this Paper.

**UNQUALIFIED** Locum required for three weeks in West of England, commencing August 22. State terms and all particulars. 258/17, Office of this Paper.

#### WHOLESALE.

**A** PRACTICAL Pill and Tablet Maker; must be able to turn out first-class work, including coating in pearl, sugar, gelatine, chocolate, etc., and take charge of department; state full particulars of experience, salary required, age, etc. Apply "Tablet," 208/456, Office of this Paper.

**LABORATORY** Assistant, qualified; used to manufacturing Galenicals (including Tinctures) and testing Drugs. Apply Wyleys, Ltd., Coventry.

**LEDALL MANUFACTURING CO.**, Camberwell, S.E.5, require Representatives for London and Provinces, with established connections; own car essential; our lines comprise Bath Crystals and Perfumery. Write full details.

**OLD-ESTABLISHED** manufacturers (compressed tablets, etc.) desire to get into touch with reputable house having Representative covering Lancashire, N. Wales and Cheshire, with a view to sharing Representative (salary, expenses and commission), or with Representative situated as indicated and representing suitable house. 208/455, Office of this Paper.

**PROGRESSIVE** Distributing Company is looking for young and capable Representatives to assist in increasing the sales of several well-known Proprietary lines. Please give fullest details of experience, and state age, salary, and if car owner. Applications will be treated with the strictest confidence. Territories vacant: London, Birmingham and Bristol. Apply "PHE," 208/459, Office of this Paper.

**REPRESENTATIVE** for Eastern Counties will shortly be required by old-established Wholesale Druggists; must have live connection, especially with the Medical profession, Hospitals, etc. desirable. State age and terms required. P.C.B. 45/27, Office of this Paper.

**REPRESENTATIVES** on commission required in all parts of the country to sell an exceptionally well-packed series of Corn Preparations, Foot Bath Salts, etc., to Chemists only; attractive proposition granting district agencies; liberal commission and excellent prospects; applicants must state, in confidence, existing commissions. 255/27, Office of this Paper.

**REPRESENTATIVES** required for town and country; high-class Hairdressers' connection essential; must own car. Send full particulars to P.C.B. 45/24, Office of this Paper.

**REPRESENTATIVE** required by well-known Perfumery House for Lancashire, Yorkshire, Midlands and West of England; must have good connection; car useful; liberal commission terms; no objection carrying other lines; fidelity bond. Write details, 257/8, Office of this Paper.

**TRAVELLERS**, calling upon Chemists, required to carry (where not already represented) a well-known Cough Pastille which is already having large sales where introduced; commission terms only. Apply, giving full particulars, to The Sherwood Confectionery Co., Potter Street, Worksop, Notts.

**SWANDOWN TOILET PREPARATIONS** require part-time Representatives, with strong personal connections with Chemists and Hairdressers, to act in advertising capacity, obtain window and counter display and leave show material. Applicant must own car. £1 per week car allowance and liberal commission to business-getter. Write full details to (Staff) Honry Tetlow Co., Ltd., 61 Eagle Street, W.C.1.

#### SITUATIONS WANTED.

##### RETAIL (HOME.)

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**A.A.A.A.**—EXPERIENCED young man; qualified; capable, keen and energetic; smart appearance; free any time. 256/37, Office of this Paper.

**A.A.A.**—ASSISTANT, Part I. Matriculation, requires (Manchester); Dispenser; keen Window-dresser and Counterman; excellent references. 255/32, Office of this Paper.

**A.A.A.**—QUALIFIED, 21, free, Square Student, desires permanency or Locum work; anywhere; sound training and experience in all branches; good references. Hitchen, 68 Fillebrook Road, Leytonstone.

**A.A.A.**—QUALIFIED, 22, desires permanency or Locum; Optics (F.R.O.A., all Practical examination passed); Lancashire preferred, not essential; excellent references; not afraid of work; disengaged. "M.P.S.", 81 Stocks Street, Cheetham, Manchester.

**A.A.A.**—QUALIFIED (lady); 6 years' good all-round experience; Assistant or capable management; moderate salary; excellent references. "C.", 35 Bradshaw Street, Wigan.

**A.A.**—ASSISTANT, qualified, desires position in good-class pharmacy. 255/23, Office of this Paper.

**A.A.**—UNQUALIFIED, long experience, quick reliable Dispenser, Photographic, Salesman, good-class Pharmacy, well recommended, desires a change. 258/7, Office of this Paper.

**A** YOUNG lady (22) seeks post with pharmacist; general Counter experience, Perfumery, Photography; excellent Window-dresser; highest references. 255/15, Office of this Paper.

**A** N M.P.S., F.S.M.C., 30, with own Optical equipment, seeks a post South England; good all-round experience; excellent testimonials. 257/17, Office of this Paper.

**A** S experienced man; Locum, Relief, Manager or general assistance; Books, Buying, Dispensing, Counter, Prescriber; deposit and easy purchase on mutual terms considered. "G.", 130 Scott-Ellis Gardens, N.W.8.

**A** S Locum or Senior; qualified; experienced; thoroughly capable all branches; Photography, A to Z. "Pharmacist," 16 Blacklands Road, S.E.6.

**A** SSISTANT (referred Part II) requires temporary position; used to good-class Dispensing, Counter, Photographic; knowledge of French. 256/8, Office of this Paper.

**A** SSISTANT; unqualified; part time, permanent or Locum; Notts or Derby districts; thoroughly experienced, Dispensing, Prescribing, Counter, Galenicals; all-round handy man; single; energetic; good references. Howard, 30 Pimlico, Ilkeston.

**BIRMINGHAM** or Midland area preferred, not essential; Locum work undertaken; all-round experience; well recommended; disengaged when suited. "Drugs," 64 Hunters Road, Birmingham.

**CHEMIST** (24) desires position high-class pharmacy, Midlands, North; Counter or Dispensing; present leading West-End firm. 255/21, Office of this Paper.

**CHEMIST-OPTICIAN**, aged 22, Square trained, requires locums or permanency; now free; go anywhere; London preferred; excellent references. T. Jones, 25 Hungerford Road, London, N.7.

**COMPETENT** Qualified Man; all-round experience; excellent references; country or country town; salary (outdoors) £3 10s. "M.P.S." P.C.B. 45/23, Office of this Paper.

**D**RUCE & CO., of Oxford, have much pleasure in recommending Mr. Baldwin as Assistant or Manager; age 24; qualified.

**E**LDERLY M.P.S., now managing London branch, single-handed, would like berth in country; South or West preferred; very moderate salary if with living accommodation; active; reliable; good references. 257/29, Office of this Paper.

**E**LDERLY, qualified Chemist desires management, Liverpool; capable; active; reasonable salary. Thomas White, 21 Miller Street, Dingle, Liverpool.

**L**ADY Assistant, unqualified, requires post in London, end of September; experienced Dispensing, Counter, Display; age 28; interview. 255/13, Office of this Paper.

**L**Ocum; qualified; 25; seven years' experience seaside, country and town; excellent references; South-West England preferred, not essential; free August 27. "Locum," c/o Heywood, 50 Church Street, Shifnal, Salop.

**L**Ocum; qualified; all-round experience; good Dispenser; disengaged September 4 (Sunday); any distance. "Pharmacist," 28 Torrington Gardens, N.11.

**L**Ocum Tenens or Manager; ex-proprietor; 49; first-class experienced service; business building expert; strict probity; free September 11; long or short; holiday, health or death; highest credentials. "Chemist-Optician," c/o J. Wood, M.P.S., Elkeston.

**L**Ocum; thoroughly capable, with excellent references; free August 27; any distance; unqualified. "H." 131 Mount View Road, N.4.

**L**Ocum or Manager; qualified; competent; 20 years' West-End experience; disengaged September 11 to 27 inclusive and after October 12. "Pharmacist," 18 Stanway Gardens, Edgware.

**L**Ocum; qualified; 34; available August 29 to September 3, and from October 3. M. Gregory, 50 Grove Lane, Camberwell, S.E.5.

**L**Ocum; disengaged; or part-time; good references. Apply "H." 7 Oldborough Road, North Wembley, Middlesex.

**L**Ocum or permanent; 42; unqualified; with good all-round experience of Pharmacy; reliable and trustworthy, with highest references. "Locum," 158 Clapham Road, S.W.9.

**L**Ocum.—Qualified Lady; experienced; free September 4 to 11 inclusive. "Chemist," 23 Castellain Road, W.9. Telephone: Abercorn 2800.

**L**Ocum; qualified; experienced; 36 years of age; free August 25; town or country. Ridsdale, Bleundworth, Horndean, Hampshire.

**M**ANCHESTER.—A tall, smart, energetic Assistant (unqualified), with seven years' good-class London experience in two posts, desires a situation in or around Manchester; change necessitated through family move; age 22 years; capable Salesman, Window-dresser and Dispenser; complete knowledge of Photographies; excellent references. Advertiser will be in Manchester for interviews week commencing August 29. Arrangements could be made to commence immediately if desired. S. H. Lambert, 33a High Road, Wood Green, London, N.22.

**M.P.S.**, "Square trained," height 5 ft. 11 in.; excellent experience in all branches, including Photography, D. and P.; highest references; disengaged. J. Simmons, 11 East Tenter Street, Minories, E.C.3.

**M.P.S.**, F.B.O.A., J.C.Q.O. register, age 23, requires permanency; moderate wage (please state) and commission on Optics; own Optical equipment if required. "Chemist," 71 Trafalgar Road, Newport, I.W.

**P**ART-TIME; West London; evenings, all day Saturdays; taking Part II course September; energetic. Green, 179 Chamberlayne Road, N.W.10.

**Q**UALIFIED Manageress; 25; 5 ft. 8 in.; good experience in all branches of the business; tactful Saleswoman, energetic; excellent references; London or near; interview appreciated. 251/32, Office of this Paper.

#### NAMES AND ADDRESSES.

When sending advertisements for any of the sections in this Supplement, advertisers—as a guarantee of good faith and not necessarily for publication—should always give their names and addresses. It sometimes occurs that this rule is not followed and delay and disappointment ensues. Strict attention to this detail will be appreciated.

**Q**UALIFIED; married; 42; excellent experience and references; free September 3; permanency only; with or without living accommodation; London or near. "Pharmacist," 51 Bensham Manor Road, Thornton Heath, Surrey.

**Q**UALIFIED; Locum or permanency; 42; excellent all-round experience; references; free August 29. Gibbs, 14 Clifton Street, Stourbridge.

**Q**UALIFIED (31) desires Locum; free September 18; excellent references. Mr. Higson, c/o Macarthy, Chemist, Market Place, Romford, Essex.

**Q**UALIFIED, 24, requires permanency; Lancs or Midlands preferred; 5ft. 11in.; Dispensing, Counter, Photographic; disengaged. Roberts, Grove House, Grosvenor Square, Sale, Manchester.

**Q**UALIFIED Pharmacist, elderly, excellent testimonials, requires position as Manager or Superintendent; moderate terms. "M.P.S.," 36 Holyhead Road, Coventry.

**Q**UALIFIED, 28, requires change; Manager; preferably South Coast or country; 12 years' finest experience; 7 years London and West-End; 5 years coastal; smart and energetic. 258/5, Office of this Paper.

**Q**UALIFIED, 25, desires employment, anywhere; wide experience all classes, particularly Photographic and Dispensing; permanency preferred, with living accommodation. 208/457, Office of this Paper.

**Q**UALIFIED; 27; capable managing; eight years' experience (five years London); locum or permanency. "Darkie," 73 Thurley Read, Wembley.

**R**ELIABLE Assistant, 24, unqualified, married, requires permanent position in or near London; capable Dispenser and good Counterfrau; London experience. 257/19, Office of this Paper.

**S**EPTEMBER 5; Locum; qualified; abstainer; London only. "Chemist," 17 Albion Read, Tettenham, N.17.

**T**ORQUAY OR PAIGNTON.—Lady, 23 years, unqualified, desires permanency; five years' varied experience good-class trade; good appearance and address; excellent references. Particulars, 61 Oribury Road, Handsworth, Birmingham.

**W**OMAN Pharmacist, 32, desires permanency; experienced Hospital and Pharmacy; free one month. 22 Eton Avenue, East Barnet, Herts.

**Y**OUNG lady (20) requires post as Assistant; pleasing personality; keen and energetic worker; artistic Window-dresser and good Saleswoman; experienced Toilet, Photographic and general Counter trade; excellent testimonials; interview appreciated. Write Nowlan, 9 Erys Road, Eastbourne.

**Y**OUNG lady; junior Assistant; 3 years' experience; good knowledge Dispensing, Counter. Read, 40 Norman Road, Newhaven, Sussex.

**Y**OUNG lady Assistant (unqualified) requires post with Doctor or Chemist; experience Dispensing with high-class Chemist; excellent reference. 256/30, Office of this Paper.

#### WHOLESALE.

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#### SALES MANAGER,

Possessing Sound Business Sense, Extended Experience Production, Marketing, Propaganda and Advertising, Home, and Export, Intimate Knowledge Indian conditions, SEEKS EMPLOYMENT IN EXECUTIVE POSITION. Recommended by present employers. Box S.M., E. J. Reid & Co., Ltd., 35 Gordon Square, London, W.C.1.

**A**FIRST-CLASS Representative, age 33, with large, live personal connection amongst the good Chemists in Lancashire, Yorkshire and Northern Counties, at present with London firm, desires change to a progressive firm requiring a real Salesman; in confidence. 258/9, Office of this Paper.

**A**DVERTISER, 39, experienced Salesman, 20 years' high-class Pharmacy, desires Wholesale appointment; good personality; reliable; highest references. "Aspirin," 12 Benn Street, Rugby.

**C**HEMIST, many years' experience in charge of manufacturing Laboratories, Wholesale Chemist and Druggists, requires post; excellent references. 255/33, Office of this Paper.

**CLEAR OUT** your Old or Damaged Stock of Photo Goods  
Why keep them any longer? Turn them into CASH.  
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**S. E. HACKETT, 23 July Road, Liverpool**

Do you want a gentleman who will keep your connection together in London on reasonable salary and expenses; and good commission on increase? Write "Salesman," 130 Scott-Ellis Gardens, N.W.8.

**GENTLEMAN** Representative is desirous of change. A House of repute where 100 per cent. sales are needed please write. Age 30; connection of eight years' standing, S.E. London, Kent, Surrey and Sussex; owner-driver. Write 256/22, Office of this Paper.

**IRISH** Representative, resident Northern Ireland, with sound connection, own car, etc., at present representing well-known British Perfumery House, desires the representation of one or two non-competitive houses of repute to work in conjunction with above; commission and part expenses basis. Reply 254/23, Office of this Paper.

**PERFUMER**, young, keen and intelligent worker, desires change with progressive company; competent in all branches of Perfumery. 256/27, Office of this Paper.

**REPRESENTATIVE**, prize records, working South Coast, desires first-class additional Agencies; sound connection, or would consider salaried position. 257/18, Office of this Paper.

**REPRESENTATIVE** offers services to house of repute; 10 years' connection amongst Wholesalers, Chemists, Hairdressers and Stores in London and South of England; Toilets, Sundries, Proprietaries. 257/36, Office of this Paper.

**TABLET** Maker and Sugar Coater wants work; young; experienced; good references; will accept 45s. per week. 256/29, Office of this Paper.

**TOILET SOAP AND PERFUMERY**.—Experienced man in Manufacture of Perfumery Lines; excellent Compounder. "W. W." Earl D'Essex Chase, Laindon, Essex.

**YOUNG** Gentleman, 23, educated, personality, enthusiastic, Retail Pharmacy, Photography experience, Research Laboratory, Petroleum and Analytical, requires post, representative, executive or suitable. Write Temple, London Central, Y.M.C.A., Great Russell Street, W.C.1.

#### COLONIAL, INDIAN AND FOREIGN.

**YOUNG** man (28), extensive Retail experience, as Manager and Assistant (unqualified), has managed both multiple and private concerns, desires progressive position abroad, Retail or Wholesale; one that has scope for energy and initiative; free now. 258/10, Office of this Paper.

#### FOR SALE.

(Articles to the value of £5-£50.)

**NATIONAL** Cash Register for Sale; small size model; has keys up to 19s. 11½d., with "No Sale" and "Paid Out" keys. Write only to T. State, 31 Barnsdale Road, Paddington, London, W.9.

#### MISCELLANEOUS.

**A FIRST-CLASS PHARMACY**, £57 10s.—10 ft. Drug Fixture, 30 drawers, glass knobs and labels, cupboards each side and under drawers; two Show Cases, mirror lined, plate-glass shelves to top section; 6 ft. Mahogany Wall Case; 8 ft. Mahogany Counter, show case front; mahogany and plate-glass Dispensing Screen and Counter, with movable plate-glass shelves. Call or post your requirements. RUDDUCK & CO., 219 and 227 Old Street, London, E.C.1.

**A LARGE QUANTITY** of Second-hand Showcases from £2 upwards (removed from various jobs); Shop Fittings, Counters, etc., at real reductions. Write requirements or call PHILIP JOSEPHS & SONS, LTD., 90/92 St. John Street, Clerkenwell, E.C.1.

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The Committee for the Protection of the Gum Mastic of Chios offer an award of £50 (fifty pounds) to any chemist or other person who can suggest a new industrial or other use for the Mastic Gum of Chios, by which new use the consumption of this article will increase by 50 (fifty) tons over and above the quantities already consumed. Suggestions are to be submitted in writing to the Chairman of the Committee before the end of January 1933. The Committee are to be the sole judges of the efficacy, etc., of suggestions. Island of Chios (Greece), July 15, 1932. G. J. Choremis, Chairman.

**TREBLES'** for Chemists' Fittings, Shop Fronts, Alterations; new or second-hand. Let us quote for your requirements. Pharmacy Fitters for over a century. 549 Lea Bridge Road, Leyton, London, E.10. Leytonstone 2475.

**£?**—**COMPLETE CHEMIST FITTINGS** at any price you wish to pay. We have erected in our showroom a Complete Chemist Shop with Metal Shop Front, Window Backs, Correct Window Lighting Signs and Modern Interior Fittings. Apply for Lists. D. MATTHEWS & SON, LTD., "The Liverpool Shop Fitters," 14 and 16 Manchester Street, Liverpool. Est. 1848.

#### EXCHANGE COLUMN.

#### FOR DISPOSAL.

(Articles up to the value of £5.)

**SCALES FOR DISPOSAL**.—Pair Drug Counter, good condition, Fig 1, Sangers, 35s.; bargain. Dispensing, Fig 7, Sangers, £1; cheap. Brooks' Drug Stores, Broadway, Deptford, S.E.14.

#### WANTED.

**SECOND-HAND** Fittings and Fixtures, etc., in good condition, required for Retail Pharmacy. 257/33, Office of this Paper.

**PAIR SWAN-NECK CARBOYS**. Marsh, 125 Northcote Road, Clapham Junction. Phone: Battersea 2284.

**SECOND-HAND TILL**. Particulars and lowest price to Channing, 4 Bartholomew Terrace, Exeter.

**CHEMISTS' DIRECTORY**, second-hand. Muller, Ltd., 37 Manchester Street, Manchester Square, London, W.

**CASH REGISTER** wanted; must be well kept and in good repair. Write to P.C.B. 45/13, Office of this Paper.

**LARGE COMPOSITION MORTAR**, capacity 1½ to 2 gallons; state condition and price. P.C.B. 45/8, Office of this Paper.

**KERATOMETER**, good make, good condition, state date of model; also Trial Case and all Sight Testing accessories. Fullest particulars to Body's Pharmacies, Southend.

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